

# EMORY

# health

PATIENT CARE, RESEARCH, AND EDUCATION FROM  
THE WOODRUFF HEALTH SCIENCES CENTER

## THE BODY REVEALED

Seeing disease sooner and smarter **2**

### **Against all odds**

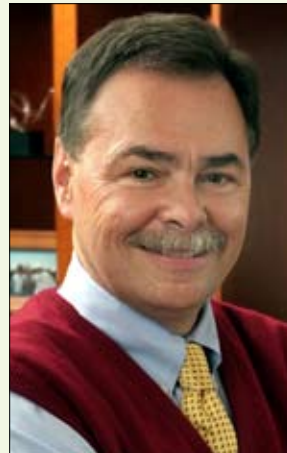
Getting a product to the medical marketplace needs a whole lot of luck **8**

**Survivor Grady** How the community helped keep the hospital doors open **12**

**Reach out and touch someone** For an AT&T exec, the slogan has new meaning **16**



## FROM THE EXECUTIVE VP



# Science fiction no more

It's easy to take the marvels of modern technology for granted. After all, who would have thought 10 years ago that it would be possible to carry Internet access or thousands of songs in your pocket? But these days, you can't go to a mall or a park or even sit in traffic without seeing someone using a Blackberry or iPod. In the short time these wonders of information and communication technology have been around, their prices have dropped and their quality has improved, creating a world never imagined just a few years ago.

There's no reason why the same shouldn't be true of the extraordinary new medical technologies that are revolutionizing health and health care. We have every right to expect the most effective health care based on the latest scientific discovery—which often means new technologies that would have sounded like science fiction in the recent past.

Health care soon will be transformed—as most other service industries already have been—by advances in information and communication technology. Information about our own personal health and decision support for our treatment options will be available at our fingertips and provided for the convenience of patients—rather than for insurance companies and health care providers. That's the idea behind Emory's Predictive Health Institute, in partnership with Georgia Tech, and it's one of the many ways we're transforming health and healing.

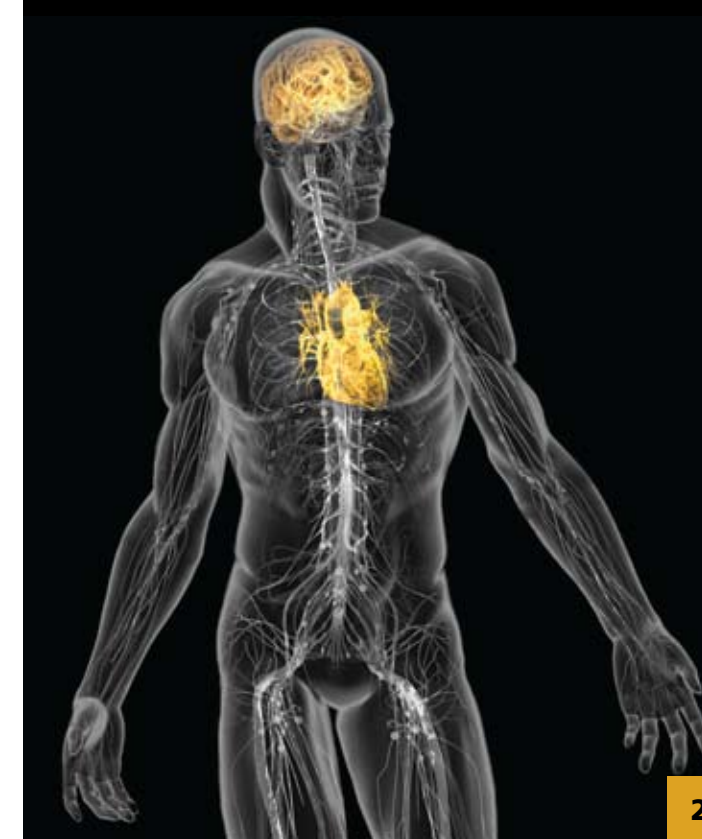
As you read through this issue, you'll see many examples of Emory doctors and scientists pioneering and delivering promising new technologies that already are radically changing health care. You'll learn about new imaging capabilities that are not only offering clearer and more accurate views within the body but also helping diagnose disease in its earliest stages, when treatment is likely to be most effective. You'll understand the process of how a biotechnology product comes to market so it can serve the people who need it, and you'll be introduced to four biotech start-ups being developed with Emory inventors.

Read further, and you'll find that we're not only about new technologies. We're also about new ideas and ways of serving the community. For example, you'll hear from Emory faculty, community leaders, and student advocates about their passionate efforts to save Grady Hospital and preserve an invaluable community resource.

The stories in this issue drive one point home for me, and I hope for you. Solutions for the future of health and healing, like those being spearheaded here at Emory, are increasingly evident and achievable when we have the vision and the will to make them happen.

Please share your feedback at [evphafeedback@emory.edu](mailto:evphafeedback@emory.edu).

**Health care soon will be transformed—as most other service industries already have been—by advances in information and communication technology.**



2

## IN THIS ISSUE

### Seeing smarter 2

Imaging today not only allows clearer views inside the body but also promises the ability to diagnose disease at its very start.

### Against all odds 8

To get a product to market takes more than a promising candidate, years of hard work, and financial backing. It needs a little luck.

### Keeping the doors open 12

The community pitches in to save a public hospital.

### Reach out and touch someone 16

An AT&T exec is glad that an Emory hospitalist decided to attend Sunday school one morning last winter.

### Clinical care 18

Doubling up on knee and shoulder surgeries. The football players' resource. Planning for a baby during and after cancer. Dramatically dropping pounds.

### Moving forward 22

A connection between hypertension and gum disease? An economic spin on why feeding poor children matters. The rock and roll health tour. Nursing in all the niches of the world. A chimp communication primer. A little light reading for the plane. Stress and overeating.

### They have a dream 28

HealthSTAT is taking its advocacy for better health care from Georgia's classrooms to its Capitol.



8



16

To fully appreciate the hospital's importance, consider life without it. "If Grady disappears, our city's health care system will be thrown into crisis..."

LOUIS SULLIVAN, FORMER U.S. HEALTH AND HUMAN SERVICES SECRETARY

## LETTERS

### Ready or not

Is Emory ready for the changes that are coming in medicine? Changes that will provide access for all citizens in our country. A health system that must de-emphasize high-tech medicine, must consider rationing, and emphasize primary care is a system we must embrace in order for our country to move forward and compete in the world.

GERALD KILPATRICK, MD, CLASS OF 1966, MEDICINE

**What do you think?** *Emory Health* welcomes your comments—pro or con—about the articles in this issue. Please address comments, address changes, letters to the editor, and other correspondence to *Emory Health*, 1440 Clifton Road, Suite 318, Atlanta, GA 30322; [rhonda.mullen@emory.edu](mailto:rhonda.mullen@emory.edu); or call 404-727-8166.

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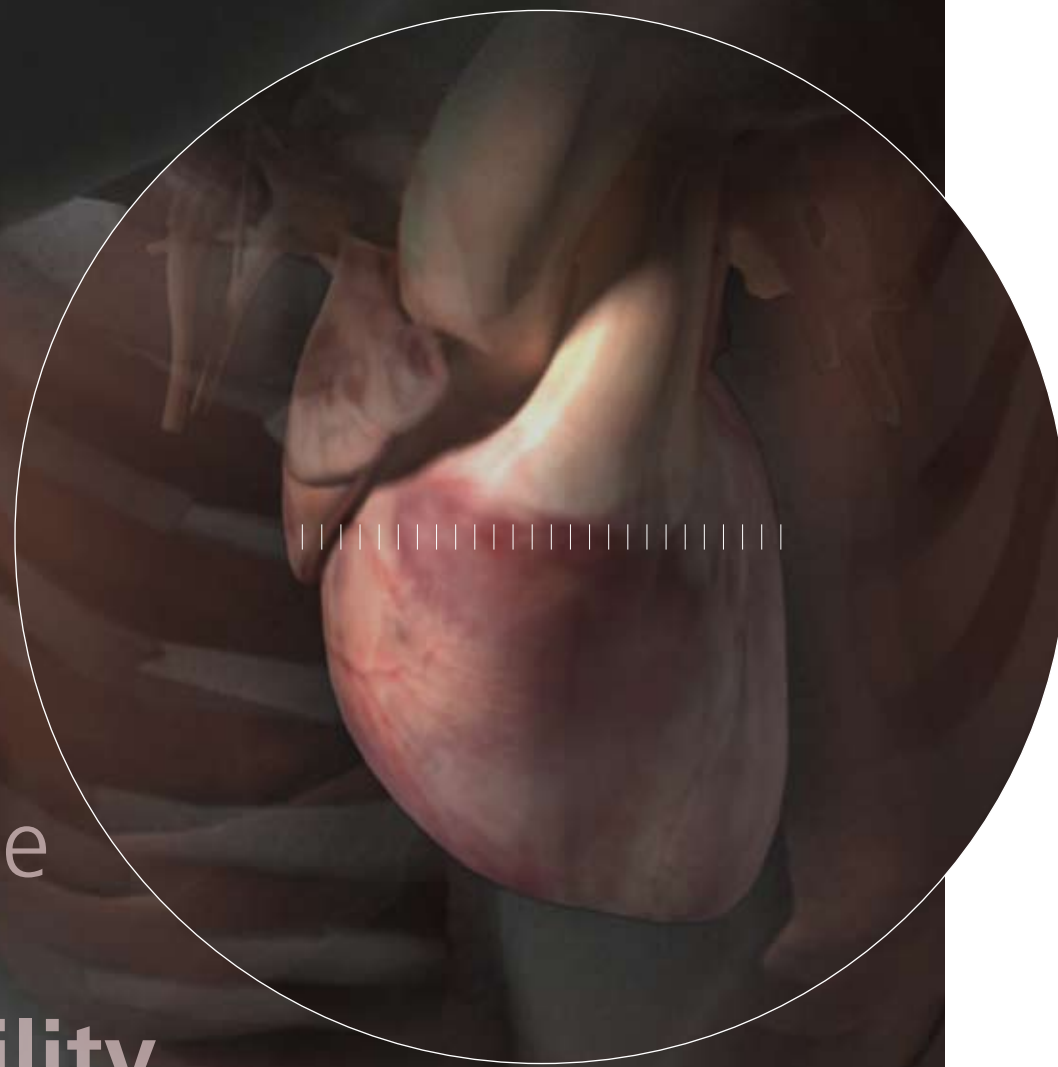
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# SEEING SMARTER

Imaging today not only allows clearer views inside the body but also **promises the ability to diagnose disease at its very start.**



By QUINN EASTMAN • Illustrations by BRYAN CHRISTIE

**In April 1947, two doctors at Emory University Hospital saw something they had never seen before.**

Their patient was a 55-year-old man who complained of chest pain, had difficulty breathing, and had lost 30 pounds in the previous three weeks. A routine chest X-ray showed nothing helpful to Heinz Weens, Emory's first chair of radiology, and his colleague Abner Golden.

The two radiologists decided to perform an angiogram—at the time, a relatively new procedure. By injecting dye into the man's heart, they could see the spaces in his arteries where blood flows. From what they saw, they guessed the patient had a dissecting aneurysm, a serious condition in which the inner layer of his aorta had torn away.

Previously, no one had ever known what a dissecting aneurysm looked like on an angiogram, as they later reported in the *American Heart Journal*.

Their diagnosis proved correct. Surgeons opened the patient's chest and repaired his aorta with cellophane. Six months later, he had gained 10 pounds.



Fast forward almost 60 years to another hard-to-diagnose patient at Emory. After being injured in a car crash, a 45-year-old woman began stuttering, had difficulty naming objects, and experienced tremors in her right hand and foot. Using standard imaging techniques, her doctors were unable to detect any brain damage. The patient was suspected of faking the symptoms and was denied disability benefits.

However, when she came to Emory, radiologist Hui Mao and his colleagues took a closer look with new technologies, and they did find something. Mao's team used a combination of functional magnetic resonance imaging (fMRI), which maps brain activities while a person performs a specific task, and diffusion tensor imaging (DTI) to diagnose the problem. By measuring restrictions on the ability of water molecules to move in different directions, DTI outlines the paths of axons in the brain, the transmission lines for the electrical signals sent by nerve cells.

Mao's group found that the woman had weakened brain activation during speech and fewer-than-normal intact axons con-

necting two lobes of the left hemisphere of her brain. The Emory scientists think that damage to the parts of the patient's brain responsible for grammar and word generation led to her stuttering and difficulty in forming a sentence, as they reported in the *Journal of Neuroimaging*.

Although DTI is still experimental and most hospitals lack the equipment and expertise to use it, Mao's team has validated it as a diagnostic tool for brain injuries. Now they are working to further develop this tool to study brain changes associated with aging and neurodegenerative disease and to research the effect of radiation and chemotherapy in patients with brain tumors.

**Seeing through multiple lenses**

As these cases illustrate, imaging technology has grown increasingly complex in the past 60 years. Doctors have more choices of tools for looking inside the body without cutting it open: not only X-rays but also magnetic fields,

radioactive chemicals, and ultrasound.

"The profusion of new techniques challenges radiologists, engineers, and medical educators," Mao says, "because understanding these tools requires expertise and collaboration from so many disciplines."

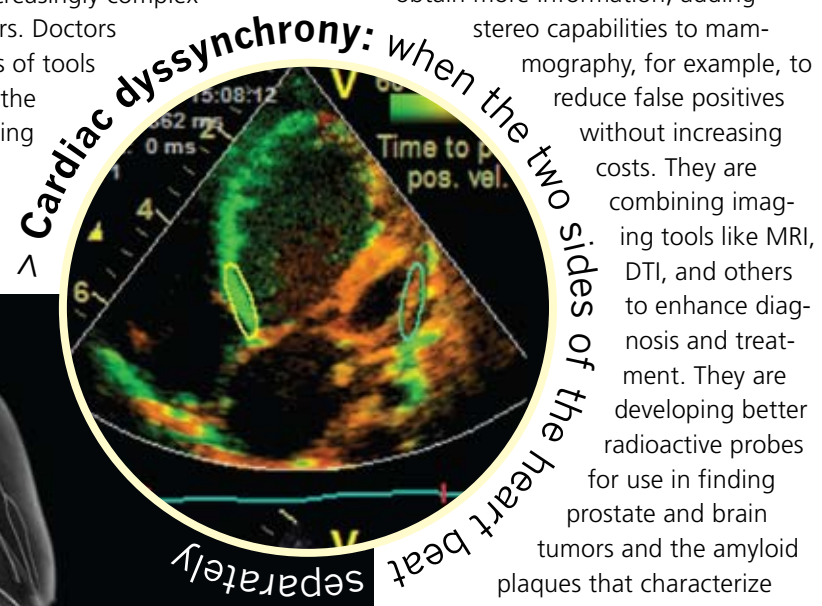
Accompanying this increased complexity is a growing demand for advanced imaging procedures, contributing to rising health care costs. At the same time, the information explosion sometimes brings confusion for patients and doctors alike. The annual number of computed tomography (CT) scans in the United States has roughly doubled in the past decade, raising concern about X-ray exposure.

Researchers at Emory are rising to the challenge by developing smarter imaging. They are improving existing technology to

obtain more information, adding stereo capabilities to mammography, for example, to reduce false positives without increasing costs. They are combining imaging tools like MRI, DTI, and others to enhance diagnosis and treatment. They are developing better radioactive probes for use in finding prostate and brain tumors and the amyloid plaques that characterize Alzheimer's. And increasingly, they are moving past anatomy to visualize function, as the tools of molecular biology filter into the clinic.

**Seeing addiction on a screen**

Imagine seeing a recovering drug addict's attendance at a 12-step meeting—from the brain's point of view. Psychiatry researcher Clint Kilts can do that.



Hui Mao has validated an experimental technology, diffusion tensor imaging, as a diagnostic tool for brain injuries.



Building on MRI, John Oshinski is developing a computer program to better diagnose what is informally known as sloshing of the heart.



Carolyn Meltzer is using imaging to study the amyloid plaques that build up in the brain and are associated with Alzheimer's.

"For the past few years, to use a car analogy, we've been concentrating on the accelerator to define the phenomenon of craving in the brain," he says. "Now, we're focusing on the brakes. If the brakes are faulty, we want to know how to get them working again." By brakes, Kilts means processes within the brain that help reformed

measure blood flow, and those distractions show up on the resulting image.

Such imaging shows clear changes in those who have successfully completed treatment. The scans allow Kilts to visualize increased activity in part of the brain called the ventral medial prefrontal cortex. He postulates that the key to treatment is

**"The profusion of new techniques challenges radiologists, engineers, and medical educators, because UNDERSTANDING THESE TOOLS REQUIRES EXPERTISE AND COLLABORATION from so many disciplines."**

EMORY RADIOLOGIST HUI MAO

addicts resist the urge to yield to intense cravings. He has teamed up with addiction specialists at the Atlanta Veterans Affairs Medical Center (VAMC) to study a group of cocaine-dependent men enrolled in a treatment program for substance abuse.

In the study, the researchers ask the men to perform a repetitive task such as counting words displayed on a screen. Occasionally, words are displayed to distract them and evoke memories of their crack-hunting days, words like "payday" or "brillo" (part of a homemade pipe). The researchers simultaneously scan the participants' brains with fMRI methods that

enhancing a process called extinction, during which the brain forms new neuronal connections that inhibit old habits.

The activation that Kilts visualized in the prefrontal cortex reflects a process going on throughout the brain's circuitry, he says. Such circuits are potential targets for an experimental drug, D-cycloserine, which is thought to enhance extinction and is currently part of an ongoing clinical trial at the VAMC.

**Looking past prostate shadows**

"For prostate cancer, there's no equivalent to the mammogram, which is relatively inexpensive and routine," says Mark Goodman, director of Emory's radiopharmaceutical discovery lab.

**A sharper image**  
Radiology milestones

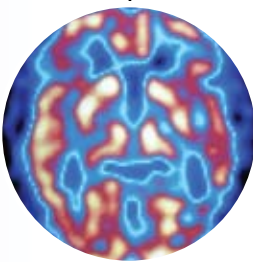
**1895 X-rays:** beams of radiation, like visible light, but more energetic. They are blocked by different kinds of tissue in varying amounts. On photographic film, soft tissue will register in different shades of black, while bone appears as white.



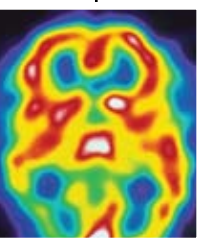
**1903 Electrocardiogram:** Electrical leads display the activity of the heart muscle over time.

**1939 Angiocardiogram:** Doctors inject a dye that absorbs X-rays into the heart, heightening the visible contrast when a chest X-ray is taken and allowing them to see coronary arteries.

**1960s Positron emission tomography (PET):** uses small molecular probes tagged with radioactive tracers, which, upon decay, emit a sub-atomic particle (positron) that travels a few millimeters before colliding with an oppositely charged sub-atomic particle (electron). That event generates two gamma rays that emerge in opposite directions, with PET recording their simultaneous detection. Changes in distribution of the probes can show the body repairing tiny bone fractures or the rate of uptake of neurotransmitters in the brain.



**1963 Single photon emission computed tomography (SPECT):** similar to PET, with the exception that only one photon is picked up. SPECT is less expensive but offers more limited spatial resolution than PET.





Urologists and oncologists agree that current methods for diagnosing prostate cancer—physical exams and the blood test for prostate-specific antigen—are inadequate. Compounding the problem, many prostate tumors grow slowly and take years to turn deadly. Treatment can leave men impotent, incontinent, or both, raising questions as to whether an aggressive approach after first detection is necessary.

In the past, clinicians have tried to use positron-emission tomography (PET) to visualize prostate tumors. The technique involves injecting a radioactive chemical into the body and imaging its distribution. But the most widely used chemical, radioactive glucose, has a specific drawback in the prostate. Glucose, a rapidly excreted sugar, collects in the bladder within minutes and overshadows the area of interest.

Emory radiologists have teamed up to test new ways to map prostate tumors and determine how deadly they could be. Goodman has developed an amino acid probe that prostate tumor cells take up readily. Radiologist David Schuster is leading a clinical trial to test the probe's potential for diagnosis. And Goodman is leading a separate trial to test the probe as a way to look at brain tumors—hard to see using radioactive glucose because the brain consumes glucose so voraciously.

**Double vision**

German engineering giant Siemens is building one of the world's three combined MRI/PET prototypes for Emory. Siemens is developing the hardware, while Emory scientists are developing the software and applications. "Combining MRI

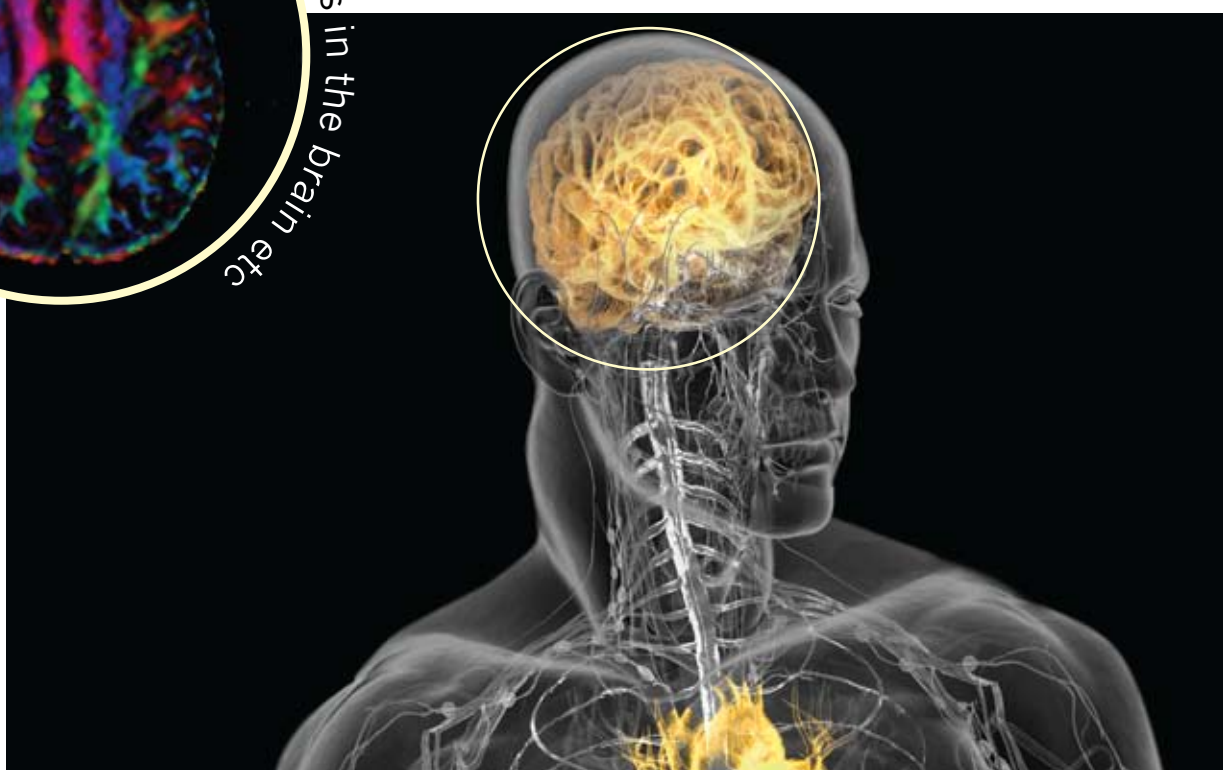
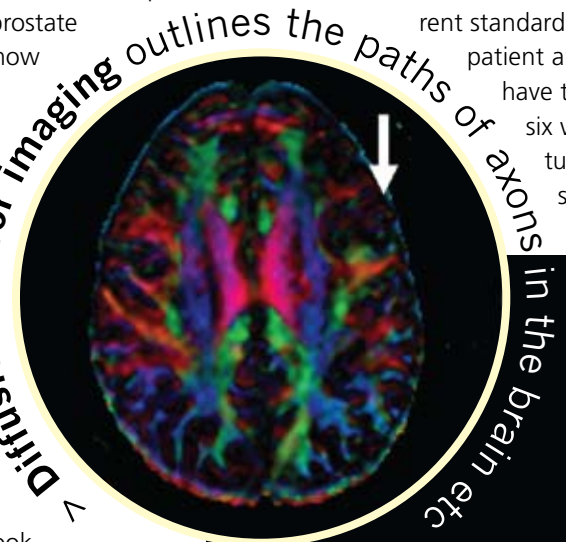
and PET allows you to overlay functional information on top of anatomical information," says John Votaw, Emory's director of PET physics and computing.

One advantage of combining MRI's spatial resolution and PET's physiologic probing will be less blurring, Votaw says. A PET scan takes about 10 minutes, and if the subject moves, the quality of the image suffers. A person undergoing a PET brain scan wears a device connected to a camera that corrects for head motion. With combined MRI/PET, MRI data replaces the camera.

In addition, combined MRI/PET allows doctors to aim their anti-tumor weapons more accurately. It also allows them to see the effects of radiation and chemotherapy on tumors more quickly.

PET probes can identify dying cells, while MRI can look for growth of aberrant blood vessels in the treated tumor. "The current

standard of care is that patient and physician have to wait four to six weeks to see if a tumor changes in size," Votaw says.



"We're aiming to evaluate a treatment after a week."

**Seeing the slosch of the heart**

Cardiac MRI specialist John Oshinski remembers when his father had a heart attack in 1968. "His doctors couldn't really do much for him," he says.

Treatment options for heart ailments have come a long way since then, and imaging continues to play a major role in ensuring such progress. Oshinski and colleagues, for example, are developing methods to more accurately diagnose a condition called cardiac dyssynchrony, in which the two sides of the heart beat separately. The condition affects about one-third of the estimated 5 million people with chronic heart failure in the United States.

"Informally, cardiologists call it 'sloshing,'" Oshinski says. "The heart spends half its energy just pushing its own walls around rather than pushing blood out to the body."

In the past five years, doctors have begun using biventricular pacemakers to treat dyssynchrony, with remarkable success in prolonging life. The pacemaker forces all the

parts of the heart to beat together. Even so, pacemakers fail to help one-third of those diagnosed with dyssynchrony, in some cases, Oshinski says, because the electrical leads of the pacemakers are inserted into muscle that already has turned to scar tissue.

MRI can help doctors refine their diagnosis and help pinpoint areas for placement of leads. Doctors currently judge patients to have cardiac dyssynchrony using a two-dimensional gauge. If the two halves of the heart's electrical signals separate enough so that together, their combined peak on an electrocardiogram spans more than 120 milliseconds, it's considered dyssynchrony.

Using 3D images obtained with MRI, Oshinski's group is developing computer programs that compare the speed of each heart wall's movement and calculate

**"Combining MRI and PET allows you to overlay FUNCTIONAL INFORMATION on top of ANATOMICAL INFORMATION,"**

JOHN VOTAW, EMORY'S DIRECTOR OF PET PHYSICS AND COMPUTING

changes in volume on each side. In the 40 patients they have evaluated so far, their method, compared with standard electrocardiography, appears to diagnose dyssynchrony with greater precision.

Their programs analyze images already gathered on heart failure patients in many hospitals. "Using this tool is a relatively inexpensive addition," Oshinski says. "All you need is software."

**Hindsight, foresight**

If Heinz Weens could see the advances in imaging technology, he'd no doubt be amazed at the ability to visualize subtle problems, such as addiction and neurodegenerative disease. In fact, he'd probably want to know more—for example, how

imaging can more directly benefit patients and guide new clinical interventions.

In 1947, the surgery to repair the patient's heart came directly after Weens took a picture of it. Today, surgeons use real-time MRI scans to guide their instruments during surgery. Researchers hope the future will bring even better ways to plan and see the effects of therapies, whether surgical or noninvasive.

Emory experts say that diagnostic imaging and treatment will continue to be increasingly interwoven. Their prediction is borne out in current studies of the amyloid plaques that build up in the brain and are a hallmark of Alzheimer's disease. Radiology chair Carolyn Meltzer says that patients with plaques need to be followed closely before they show signs of Alzheimer's. This

is because the role of plaques in Alzheimer's development is still a subject of debate and question.

"Many people accumulate amyloid for years without showing cognitive impairment," Meltzer says.

Researchers are just now designing treatments that target amyloid. "The most interesting challenge will be to couple sophisticated imaging with these targeted strategies," says Meltzer.

Will radio advertisements one day offer amyloid PET scans, just as they do now for cardiac CT? It seems plausible. But one thing's for sure—it's a ways off. "We need more longitudinal studies of patients as they develop Alzheimer's to know what we're looking at," Meltzer says. "We may need a decade of experience to understand this technique fully."

Seeing smarter is bound to be part of the journey. ☞

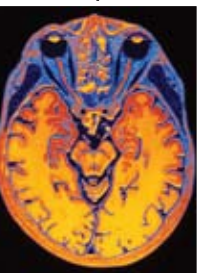
**WEB CONNECTION** To see a video of cardiac dyssynchrony, visit [whsc.emory.edu/r\\_dyssync.html](http://whsc.emory.edu/r_dyssync.html). Examples of imaging techniques of the prostate are at [whsc.emory.edu/prostate.cfm](http://whsc.emory.edu/prostate.cfm).

Radiology milestones *continued*

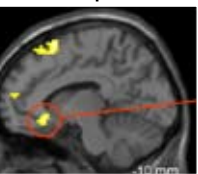
**1972 Computed tomography (CT):** rotates an X-ray camera around a patient's body to take a cross-sectional image, or slice. A computer combines the slices into 3D images, which doctors use to visualize internal structures or plan surgery.



**1980s Magnetic resonance imaging (MRI):** creates an intense but benign magnetic field that makes hydrogen atoms align, like a row of compass needles, and resonate when given a radiofrequency signal or pulse. Water molecules in the organ or tissue are the target of the MRI signal, creating highly detailed images of different organs such as the brain and other soft tissues. The development of MRI for human application was awarded the Nobel Prize in 2003.



**1990 Functional magnetic resonance imaging (fMRI):** refers to use of MRI to sense changes in blood oxygen levels during brain activation, allowing for mapping of brain functions. The changes correspond to increased blood flow, a sign of metabolic activity, in parts of the brain during different activities.



**2000s Molecular imaging:** a multidisciplinary approach to imaging physiologic and biologic processes at molecular and cellular levels in a living system.



To get a product to market takes more than a promising candidate, years of hard work, and financial backing. It needs a little luck.



T E C H N O L O G Y

T R A N S F E R



## AGAINST ALL ODDS



In 2005, Emory scientists Dennis Liotta and Raymond Schinazi capitalized on decades of research, selling the rights to a major new AIDS drug they had discovered and developed—Emtriva. The sale earned the university \$540 million to invest in research and the researchers the freedom to pursue new studies.

For every Emtriva, however, there are countless other products that never make it to market, much less strike it big. Some, after years of development and testing, fall short in a late-stage clinical trial. Some, despite true promise in animal trials, fail to rise above the din and attract a venture capitalist's attention. Some aren't identified as important early enough in process and so fail to get a patent.

"Only about 1% of the products being researched will be a big hit financially," says Todd Sherer, director of Emory's Office of Technology Transfer.

To be in that 1% takes a good product, years of hard work and, more often than not, luck.

By MARTHA NOLAN MCKENZIE • Illustration by JAMES SOUKUP





The daunting odds of success have a lot to do with the nature of university research. Unlike corporations, which will fund only research that has a high likelihood of paying off, university research is fueled by scientists' curiosity. "We are pursuing knowledge for knowledge's sake," says Sherer. "That kind of research will lead to more revolutionary discoveries. But it also carries a higher risk of never panning out."

The Office of Technology Transfer identifies products and procedures that have real potential and then helps them get through the tangle of regulatory and legal processes that precede a market debut.

"It's a wonder anything gets to market," says Sherer. "There is a lot of technology and innovation pooling up behind the dam—only a tiny bit trickles out to the marketplace. A lot of excellent research never sees the light of day."

### Stacking the AIDS deck

GeoVax is one Emory start-up that is hoping to beat the odds. The company has developed a vaccine to prevent HIV/AIDS that is currently in phase 1 clinical trials in humans. Results have proven so promising that GeoVax plans to begin phase 2 trials this summer—about a year ahead of schedule.

ologist Harriet Robinson, one of the scientists to discover DNA vaccines in the 1990s and chief scientific officer at GeoVax.

The GeoVax team first tested the vaccine in rhesus monkeys, with better than expected results. "We protected 22 out of 23 nonhuman primates for almost four years after they were exposed to the virus," says Don Hildebrand, GeoVax CEO. "By contrast, 5 out of 6 monkeys who were not vaccinated died within a year."

In the first human trial, the vaccine has boosted T cell and antibody responses at just one-tenth the optimal dose. Researchers have seen very good responses in 80% of the volunteers who received the full dose, says Robinson. The vaccine also has proven safe, she says, with participants reporting no problems or side effects.

Buoyed by these results, GeoVax has started planning therapeutic trials to vaccinate people already infected with AIDS but who remain relatively healthy, with intact immune systems. In preclinical trials with HIV-infected monkeys, the animals responded so well to the vaccine that they no longer needed anti-retroviral drug treatment. Treatment with a vaccine rather than with complicated, life-long drug regimens also has great potential to reduce costs and side-

effects, according to Robinson. "If this vaccine works, it will break the epidemic," she says. "A vaccine that is only 30% effective could begin to break an epidemic, and we certainly hope ours would do better than that."

### Betting on a cure

The odds of winning in the tech transfer

game can improve substantially with the right name. Just ask Pharmasset. In 2004, the six-year-old Emory biotech start-up was able to secure funding largely on the strength of the reputation of its founder, Raymond Schinazi.

Today, Pharmasset is a publicly traded company residing in Princeton, N.J., and Schinazi is no longer directly involved with its operations. "It's sort of like having a child," he says. "It has grown up and left the nest." The company now has several promising products in its pipeline. One of these drugs, Clevudine, an oral medication for hepatitis B, is in advanced clinical trials in the United States and already is in use in Korea. Studies have shown that Clevudine brings virus levels down and keeps them down—important especially in Asia where hepatitis B is endemic and in the United States, as well, with more than 1 million people infected.

"It has the potential for curing hepatitis B infections," says Schinazi.

Next in Pharmasset's arsenal is Racivir, a treatment for a resistant strain of HIV. "Racivir is potentially a 'me-better' as opposed to a 'me-too' HIV drug," says Schinazi. "It works against a viral mutation of HIV that is found in the majority of patients, and it has been shown to be safe."

A particular attribute of Racivir is its low manufacturing cost. "That has huge implications in Africa, where they've historically been worried about the cost of treatments and somewhat less about their effectiveness," says Schinazi. "If we can provide an effective, low-cost drug, the impact will be amazing."

Pharmasset's "crown jewel," according to Schinazi, is R7128, a treatment for hepatitis C, the leading cause of liver disease. More than 170 million people are infected with hepatitis C worldwide, as are 3% of Americans. In the United States, many patients have a form of the virus that does not respond to current treatments. In phase 2 clinical trials, R7128 reduced the virus to undetectable levels in an astonishing 85% of patients after only four weeks of treatment.

"R7128 is an H-bomb for the hepatitis C virus but essentially harmless for the host,"

says Schinazi. "We are talking about a potential cure for hepatitis C here. This could have a huge global impact."

### Spinning the wheel for stroke

NeurOp, a six-year-old Emory biotech start-up, is developing a novel treatment for stroke victims that could dramatically curtail the devastating effects of stroke. Whether patients will ever get a chance to benefit from the product will depend on whether the company can convince investors of its promise.

"We are at that delicate stage of small company development where we have a proof of concept in animal models that our strategy is sound and should work," says Emory pharmacologist Raymond Dingledine. "We now need to raise enough money to actually bring the whole thing home. We're talking with several pharmaceutical companies and venture capital firms, but the clock is ticking. Small companies can't survive forever," says Dingledine, who co-founded NeurOp.

The drugs NeurOp is developing target a protein in the brain that is responsible for one-third to one-half of the brain damage suffered by stroke victims. Blocking that protein can prevent the damage from occurring. But there's a problem: the same protein is necessary for normal function in the other healthy parts of the brain. Blocking it can lead to mental clouding, cognitive impairment, hallucinations, and lack of coordination.

That's where NeurOp's approach is so unusual. Dingledine and Emory pharmacologist and NeurOp co-founder Steven Traynelis have developed a drug that blocks the protein in the damaged part of the brain but leaves it alone in the healthy parts. That's because the drug's action is magnified in an acidic environment. And when a person suffers a stroke, blood supply to part of the brain is cut off. The metabolism in that section switches from aerobic to anaerobic, and the tissue begins to make lactic acid and other acid metabolites, just as muscles do during a heavy workout. As a result, Dingledine and Traynelis are able to administer a dose so low that healthy regions of the brain are unaf-

ected, but the damaged, acidic regions of the brain receive the drug action.

"This product could fill an enormous, unmet medical need," says Dingledine. "Right now the only therapy for stroke is tPA, a clot-busting drug, but it is administered only to 2% of stroke patients. It has to be given immediately—within a few hours of the stroke—to do any good. Also, if it's a stroke caused by bleeding in the brain, it makes the bleeding worse. So doctors have to determine the type of stroke—blockage

or bleeding—before they can give tPA. Our drug could be given by paramedics to any stroke victim on the way to the hospital."

### The ante for safer blood

The vast majority of problems related to blood transfusions stem from human error, says pathologist Chris Hillyer. Indeed, a single error can lead to the wrong unit of blood being given to a patient, with fatal results.

Hillyer, and his fledgling company, 3Ti, have a potential solution. The Aegis Blood Analyzer and System fully automates the process of testing and typing blood—a process that was done manually until about 10 years ago. "Our technology leapfrogs what is currently out there," says Hillyer. "It's faster, better, cheaper."

Aegis can quickly and accurately perform the standard blood bank tests—blood grouping, red cell antibody screening, and donor/recipient cross-matching tests. But it goes beyond that to also test for particular anti-

bodies that, if contained in the donor's blood, bind white cells in the recipient and in turn clog the lungs. The condition is the leading cause of transfusion-related deaths.

Aegis uses technology that relies on fluorescent light to examine microscopic particles. It can carry out multiple tests with only the smallest sample of blood, making it relatively inexpensive to operate.

Hillyer and 3Ti co-founder John Roback also have another product to take the company from the blood bank to the bedside.

They have developed a device that samples a patient's blood and blood that is bagged before it is given to test for a match.

"A lot of people are trying to solve the problem of giving a patient the wrong blood, but they are focusing on improving patient and unit identification," says Hillyer. "This device, if it sees the light of day, should take away all elements of human error."

Hillyer says "if" because 3Ti, like NeurOp, has finished its proof of concept phase and is now trying to secure funding to start clinical trials. "We have won two awards in Georgia for our outstanding technology," says Hillyer. "Our products have incredible potential to save a lot of lives. But at the end of the day, none of that will mean anything if we can't get the funding." ■

*Editor's note: These faculty members and Emory University have equity interests in the companies described. They may receive royalties on the technologies being studied, and some may have paid consulting relationships.*

**In the first human trial, the GeoVax vaccine has boosted T cell and antibody responses at just one-tenth the optimal dose.**

**The drugs NeurOp is developing target a protein in the brain that is responsible for one-third to one-half of the brain damage suffered by stroke victims.**

The vaccine involves a two-part regimen. First, the patient receives a DNA vaccine, which primes the body's immune response. A few weeks later, the patient receives a different type of vaccine, a modified vaccinia Ankara (or MVA), to boost the original immune response. Neither contains the "live" virus and therefore cannot cause a patient to develop HIV, according to Emory immunol-

**WEB CONNECTION** To see a slideshow about Emory biotech start-ups, see [whsc.emory.edu\\_r\\_techtransfer.html](http://whsc.emory.edu_r_techtransfer.html). Also visit [ott.emory.edu](http://ott.emory.edu).



# Survivor Grady

By MARTHA NOLAN MCKENZIE

It took an entire community pulling together to keep the doors of Atlanta's public hospital open. Now what?

A little more than a year ago, it looked as if Atlanta's Grady Memorial Hospital was poised to follow in the footsteps of Philadelphia General, D.C.'s General Hospital, and Martin Luther King Hospital in Los Angeles. These public hospitals all closed their doors, forced out of business by spiraling health care costs, falling funding, and rising numbers of uninsured patients.

However, Grady apparently had something the other hospitals lacked—a committed, visionary, and influential group of supporters, who were determined that the hospital must survive. They were able to bring on board a disparate group of political, business, and civic leaders, creating the momentum needed to turn around a vast ship like Grady. Today the hospital has new leadership, an infusion of funding, and a plan for moving forward.

“The community stepped forward and rallied behind its mission and goals. That is what saved Grady,” says Michael Johns, who was CEO of Emory's Woodruff Health Sciences Center when the fiscal and governance crisis began more than a year ago and is now Emory University chancellor.

“They turn to Grady for help because it's ‘their’ hospital, or because they have been turned away by everyone else: the underinsured who can't make a cash co-pay, the homeless, victims of interpersonal violence too frightened to speak, the resource poor with chronic mental illness, diabetes, hypertension, congestive heart failure, addiction, and asthma. Where might these individuals find acute medical care, refuge, a referral, or hope in a community without Grady?” —Kate Heilpern, chair of emergency medicine, Emory, originally published in *Emory Report*.





"Without Grady, should Atlanta have the misfortune to experience a terrorist attack or a major passenger airline crash, we would be woefully unprepared to care for the many injured persons." —Louis Sullivan, a member of Grady's governing board and former U.S. Health and Human Services secretary.



Grady's mission, established with the hospital's creation in 1892, is to care for the city's indigent. "It serves our local citizens in its safety net role as it wraps its arms around the disenfranchised," Katherine Heilpern, chair of emergency medicine at Emory, wrote in an editorial in the *Atlanta Journal-Constitution*. "They turn to Grady for help because it's 'their' hospital, or because they have been turned away by everyone else: the underinsured who can't make a cash co-pay, the homeless, victims of interpersonal violence too frightened to speak, the resource poor with chronic mental illness, diabetes, hypertension, congestive heart failure, addiction, and asthma."

**But Grady's importance reaches far beyond its charity mission. Staffed by Emory and Morehouse physicians, it has one of the nation's leading trauma centers.** In fact, it offers the only level 1 trauma center serving Metro Atlanta and North Georgia—the next closest being in Macon or Chattanooga. It operates the state's only poison control center, Atlanta's only burn center, and one of the country's largest and most comprehensive HIV/AIDS programs. And Grady is the training ground for future doctors, nurses, and other health care professionals. Indeed, one out of four doctors in Georgia trained at Grady through Emory or Morehouse.

To fully appreciate the hospital's importance, consider life without it. "If Grady disappears, our city's health care system will be thrown into crisis," says Louis Sullivan, former U.S. Health and Human Services secretary and a member of Grady's new governing board. "Our low-income citizens will have a much more difficult time obtaining the care they need and deserve. The special services Grady has available for all of us, such as trauma care, the poison center, the cancer center, and others, will no longer be available. The other hospitals and clinics in Atlanta will not be able to fill the void in health services that would be created if Grady closes. Without Grady, should Atlanta have the misfortune to experience a terrorist attack or a major passenger airline crash, we would be woefully unprepared to

care for the many injured persons."

The loss of Grady would deal Atlanta an economic blow as well. Without Grady, Atlanta would be at a competitive disadvantage in attracting organizations and businesses to locate here, says Sullivan. "Atlanta's convention business, a major part of our economy, would also suffer significantly."

All the services Grady provides, while critical, are costly. The deans of both Emory and Morehouse can attest that medical education is expensive. Trauma, burns, HIV/AIDS, tuberculosis, neonatal intensive care, and teaching are not profitable ventures.

And while Grady's costs have mounted, its funding has failed to keep pace. In fact, annual contributions from Fulton and DeKalb counties have been flat for the past 15 years, while funding from the state actually has shrunk. In addition, Medicare, Medicaid, and private insurers have cut reimbursement rates in an effort to control costs, and the number of uninsured has ballooned. Today, 40% of the patients Grady treats lack any type of insurance.

Rising costs plus shrinking income equals a lot of red. Grady has operated at a loss for 10 of the past 11 years. It finished last year with a \$55 million deficit, and one foot poised above the grave.

Rallied by a new sense of urgency, the Metro Atlanta Chamber of Commerce stepped up and—with the Fulton-DeKalb Hospital Authority's consent—created a task force to develop a plan to resuscitate the hospital. Prominent leaders from diverse businesses and institutions—including Emory's Johns and Morehouse School of Medicine President John Maupin—lent their time, experience, and talents to the effort.

"This was all about trying to preserve Grady's historic mission and raising the money to get that done," says Pete Correll, chairman emeritus of Georgia-Pacific and co-chair of the task force. "Nobody wanted to be involved in running a bankrupt hospital. But here was a unique opportunity to fix Grady if we all came together and were committed."

**In July of 2007, the task force issued a concise, 23-page report outlining its recommendations for Grady, which centered on changes in governance and funding.** "The task force report was the sea change in the whole process," says Thomas Lawley, dean of Emory's medical school. "The fact that it was prepared by an independent group of people who had no direct stake in Grady lent tremendous credibility."

High on the list of recommendations was revamping the hospital's structure from the hospital authority model, characterized by the report as "outdated competitively and a barrier to necessary change," to a 501(c)(3) nonprofit organization, governed by a non-political, private board. The new 17-member board reads like a Who's Who of Atlanta business and community leaders. Chaired by Correll, it includes Sullivan, prominent attorneys, CEOs of several large corporations, the Atlanta school superintendent, and others.

"The idea of replacing the politically appointed board with a board whose primary fiduciary responsibility was to the hospital and its mission was a critical piece for success," says Johns. "These are people who understand the community, the mission, and the politics, and they can get out there and really work for the success of this organization. They have leadership ability, but they also have clout. People will listen to them."

The change in management cleared the way for Grady to receive promised funding of hundreds of millions of dollars in private donations and government funding, including a life-saving pledge of \$200 million over four years from the Robert W. Woodruff Foundation. The promise of this money, which will be used to buy equipment and support other non-operating costs, was a key incentive in winning support to convert Grady's management structure.

How did this windfall come about? Correll simply asked for it. "The foundation had been monitoring the Grady situation for 10 to 20 years," he says. "They had been approached hundreds of times about support, but they had not been comfortable with the previous governance structure. But, as

they have many times in our community, they took the lead. The magnitude of the gift has caught everyone's attention, and it will make it easier for us to raise the balance of what we need.

"We've committed to raise another \$100 million over the next four years, and I have every expectation we can do more than that," continues Correll. "So we are well on the way with capital funding. We still have a long way to go toward improving the operations and getting additional operating funding."

Indeed, some hoped-for operating funding already has fallen through. Although the outlook for legislation to fund a statewide trauma care network was optimistic, the General Assembly ended its 2008 session without approving the bill. The legislation could have provided up to \$30 million annually for Grady. Instead, the legislature made a one-time appropriation for trauma care of \$58 million, of which \$24 million is expected to go to Grady.

"Hopefully, the trauma bill will be back on the table in the next session," says Johns. "It's good for Grady and the entire state. It saves lives, and it's just the right thing to do."

The hospital needs to shave its operating costs by \$50 to \$60 million a year, says Correll. "That means the people working at the hospital need to accept that they are going to have to dramatically change what they do and how they do it."

**Despite the challenges ahead, Grady has managed to get off the critical list and is taking the first steps toward recovery.**

"This city, unlike so many others that faced a similar challenge, has come together," says Morehouse's Maupin. "Disparate opinions from disparate groups all filtered down to one message: Grady is vital and needs to thrive. I think we now have the will, the wherewithal, and the expertise to turn the crisis into a model public hospital."

As Johns adds, "Now the hard work begins." ■



"We committed to raise another \$100 million over the next four years, and I have every expectation we can do more than that. So we are well on the way with capital funding." —Pete Correll, co-chair of the task force to save Grady.

**WEB CONNECTION** For extensive coverage on Grady's crisis, see [emory.edu/grady/](http://emory.edu/grady/). To read the Grady task force report, see [whsc.emory.edu/r\\_gradyrecs.html](http://whsc.emory.edu/r_gradyrecs.html).



# Reach out and touch someone

For this AT&T executive, the slogan has new meaning. • By PERKY DANIEL

**P**ain jolted his chest, then radiated sharply down his left arm. He turned to his brother-in-law and said, “I need to get to the hospital. I think I’m having a heart attack.”



It wasn't just any Sunday morning when Emory hospitalist Twanna Woodson reached out to save David Scobey's life.

They headed toward the church door. He'd attended the early worship service and had committed to teach a Sunday School class. Groups of congregants stood in the halls, chatting and catching up on each other's news. As he walked further, his head began to spin. Turning right toward a sofa, he exclaimed, "I'm not going to make it." With those words, David Scobey Jr., at the time president and CEO of AT&T Southeast, collapsed. His brother-in-law eased him onto the sofa, grabbed a cell phone, and called 911.

A few minutes earlier after attending early service, Olivia Comer and her husband had decided to take their infant son home because he was feeling unwell. Standing a few feet from the door, Comer caught a glimpse of Scobey and knew something was wrong. He looked pale, bluish, and short of breath. "He's dying," thought the pediatric oncology nurse. As Scobey went down, Comer rushed to his side, calling for someone to find a physician fast.

At her shout, runners dispersed to classes to find a doctor and to ask for prayers. Recognizing that their church, North Atlanta Church of Christ, has a number of entrances and sits back from the street, several parishioners went to the parking lot to guide the ambulance to the entrance where Scobey lay unresponsive.

Twanna Woodson, an Emory physician and hospitalist at Emory Eastside, also had worshipped early. She had planned to skip Sunday School to get together with family she hadn't seen in a while. She stopped to visit with friends, then walked toward her car, keys and phone in hand. But just as she turned to open the car door, an internal voice urged her, "Go back inside, go to Sunday School." She even argued back: "I have no intention of going back in. I don't even know which class to go to. We're in the middle of a session. Class has started. I'll be late." Again, that still, small voice prompted her to go back inside. Woodson thought to herself that she must really need to hear this morning's lesson.

It was, after all, early December, Advent on the Christian calendar, a season of acknowledging human frailty and responding with hope. Advent offers assurance of the strength of love's saving grace. In those shortest days of winter, many faiths celebrate light, light that reliably penetrates darkness. Culturally, the holiday season holds the prospect of the good gifts of joy and togetherness.

So Woodson put her keys and phone away, returned to the

BUT JUST AS SHE TURNED TO OPEN THE CAR DOOR, AN INTERNAL VOICE URGED HER, "GO BACK INSIDE, GO TO SUNDAY SCHOOL." SHE EVEN ARGUED BACK: "I HAVE NO INTENTION OF GOING BACK IN. I DON'T EVEN KNOW WHICH CLASS TO GO TO. WE'RE IN THE MIDDLE OF A SESSION. CLASS HAS STARTED. I'LL BE LATE." AGAIN, THAT STILL, SMALL VOICE PROMPTED HER TO GO BACK INSIDE.

building, and found a large, mixed-age class. She began listening to the preliminaries and prayer requests when the classroom door opened. "Is there a doctor in here? Anyone in the health care profession?" a man asked. In that instant, Woodson knew why she was supposed to come back inside. She followed the man down the hall to where Scobey sat.

His brother-in-law was on the phone directing the ambulance to the church. Others stood nearby, praying. Scobey's wife and parents had been brought to his side. Someone went to get his mother a chair and a cup of water. Woodson recognized Scobey as someone who, with his family, sat near her in church. In fact, she'd just seen him walk past her a few minutes earlier, and he'd looked fine, then.

Now Scobey was lethargic, in and out of consciousness. "Are you okay?" Woodson asked. "No . . . hot," Scobey said. "Just hot. Chest hurts." Then Scobey passed out. His heart stopped. Several men gently transferred him from the sofa to the floor.

Woodson began chest compressions. Comer leaned in to start mouth-to-mouth resuscitation.

With the 15th compression, Scobey came to and tried to push Woodson's hand away. It was a good sign. Someone appeared with a defibrillator. Just as it was attached, the ambulance arrived, and paramedics loaded Scobey on a stretcher and took off.

Sixteen minutes had elapsed from the time Scobey passed out. He was rushed to the emergency room, diagnosed with complete blockage in the left anterior descending artery, and taken immediately to surgery to repair his heart. The condition is grimly known as "the widow maker."

Later when Scobey was back in a hospital room with his wife, parents, sister, and brother-in-law, the surgeon described the problem and the repair. When the family thanked the surgeon for saving Scobey's life, he said, "No, I fixed his heart for the future. The people that worked on him at your church saved his life."

Listening and responding to that still, small voice, being willing to set aside personal plans to answer to an immediate need, and applying precise medical skills makes all the difference.

That's Emory, in the community, reaching out, touching lives. ☒

*Perky Daniel, a retired Presbyterian minister, is a freelance writer based in Decatur, Georgia.*



## Having babies, *after cancer*

**When a woman is diagnosed with cancer, the first focus is saving her life. But the powerful chemotherapy and radiation that cures cancer or drives it into remission can end a woman's ability to conceive children. However, oncofertility, a new 21st-century specialty now offered at Emory, offers hope to women who want to have children after cancer.**

The Emory Reproductive Center is the only medical center in Georgia that belongs to the Oncofertility Consortium, an NIH-sponsored network of medical specialists, scientists, and scholars who study the relationships between health, disease, survivorship, and fertility preservation in young cancer patients. The new discipline bridges information and technology gaps between oncology and reproductive medicine, and it provides viable options for women who want to preserve their fertility after cancer, says **Carla Roberts**, who leads Emory's oncofertility program.

Men have long had options for preserving fertility when faced with cancer. Sperm banking is routine and preserves fertility for most men, according to Roberts. "Now new advances in fertility are giving many female cancer patients a chance to 'bank' their fertility too," she says.

Each year, the American Cancer Society estimates that approximately 55,000 females who are either prior to or in their reproductive years receive a cancer diagnosis. Advances in cancer treatment during the past few decades have improved survival significantly. For people younger than 45, the overall survival rate is approximately 80%, according to Roberts.

To help patients explore options to preserve fertility, Emory offers rapid consultations for any woman of reproductive age diagnosed with cancer. Embryo banking is one route offered to most

women (unless they have a cancer such as hormonally responsive breast cancer). This process, known as emergency in-vitro fertilization, takes up to two weeks and requires hormone stimulation of the ovaries to mature sufficient numbers of eggs. Technicians then retrieve the eggs and fertilize them with sperm, freezing the resulting viable embryos until a woman has completed cancer treatment and is ready to attempt pregnancy.

Another alternative is cryopreservation of oocytes, the female germ cells produced in the ovaries that give rise to eggs. However, two challenges exist with this approach: the success rate is lower than with embryo freezing, and the weeks of hormone therapy needed to obtain a sufficient number of mature oocytes can delay cancer therapy. Still, great advances in the understanding of this approach makes cryopreservation of oocytes the cutting edge for oncofertility research and a clinical focus, says Roberts.

Emory is in the early stages of enrolling patients between the ages of 18 and 40 who have potentially curable cancers (including leukemias, lymphomas, and breast cancers) in an NIH-sponsored clinical study to

preserve fertility. The researchers' goal is to establish a technology that will enable long-term preservation of ovarian tissue, including the production of viable oocytes by cryopreservation of ovarian tissue prior to chemotherapy or radiation. Another objective of the study is to develop in vitro techniques that will allow maturation of oocytes from cryopreserved ovarian tissue. —Sherry Baker

*For more information about oncofertility and the Emory Reproductive Center, call Karen Birdsong at 404-686-3749.*



## Back in the game

**Lemar Marshall is big, strong, fast, and tough.** At 6'2" and 225 lbs. of solid muscle, the 31-year-old Cincinnati Bengals middle linebacker looks as though he could take on anything and come out unscathed. But three sports injuries over the past few years temporarily sidelined the NFL football player—and he turned to Emory Sports Medicine for treatment.

In 2006, while playing for the Washington Redskins, Lemar dislocated his shoulder, and Emory's chief of Sports Medicine, **John Xerogeanes**, performed the surgical repair. That same year, he repaired Marshall's torn meniscus—a rubbery, C-shaped disc that cushions the knee. Last fall, when Marshall's Achilles tendon was ruptured during NFL action, he once again came to Emory Sports Medicine for surgery, this time by ankle specialist **Sam Labib**.

Marshall's trek to Emory for treatment is a familiar destination for many NFL players. In fact, Emory Sports Medicine has treated or consulted with more than 100 NFL players over the past several years.

Although each NFL team has its own team doctors, players often consult with Emory physicians for second opinions. "As subspecialists, we are contacted to see if we agree with the treatment plan and diagnosis," says Xerogeanes. "The evaluation also needs to be turned around quickly—sometimes within 24 hours."

What's the biggest difference between treating an injured weekend warrior and an NFL player? "The pro athletes are concerned not only about feeling better but also about their livelihood," says **Forrest Pecha**, program manager of Emory Sports Medicine. "They want to make sure they are getting the best treatment because it is going to affect their bottom line. Injuries not only can end careers but also impact contract negotiations. Good news about a prognosis or surgery outcome may put a positive swing on those contracts."

The NFL players make great patients, Pecha adds. "They are pros and work hard at rehab. They come here knowing that we understand their livelihood and that parts of their career are in their hands. We will do whatever we can to get them back in the game." —Sherry Baker



**98 Lemar Marshall**  
LINEBACKER



"The pro athletes are concerned not only about feeling better but also about their livelihood. They want to make sure they are getting the best treatment because it is going to affect their bottom line."

—Forrest Pecha, program manager of Emory Sports Medicine

**WEB CONNECTION** For more information about Emory Sports Medicine, visit [www.emorysportsmedicine.org](http://www.emorysportsmedicine.org). For an appointment with John Xerogeanes, Spero Karas, Sam Labib, or other sports medicine specialists, visit [www.emoryhealthcare.org](http://www.emoryhealthcare.org) or call 404-778-7777.

## Cancer blues

*These days, Emory's Winship Cancer Institute is blue, but that's a good thing. Winship has received designation as a Blue Distinction Center for Complex and Rare Cancers from Blue Cross and Blue Shield of Georgia. Winship is the*

*only facility in metro Atlanta to earn the designation for complex inpatient and surgical care, awarded to medical facilities that have demonstrated expertise in delivering the highest quality health care. See [cancer.emory.edu](http://cancer.emory.edu).*



## Tackling a **Weighty** Problem

**At 41, Michael Kay tipped the scales at 324 lbs.** His blood pressure and cholesterol levels were up, and he had back and knee problems, prompting his family doctor to refer the Tucker, Georgia, resident to Emory. Six months after undergoing adjustable laparoscopic band surgery, Kay has lost more than 140 pounds and a host of health problems. Today his blood pressure and cholesterol levels are normal. He no longer needs medication to control his cholesterol. And his knee pain is gone.

"I have a lot more energy, confidence, and stamina than I did before," says Kay.

Kay is not alone in his struggle with obesity. According to the CDC, approximately one-third of all adults and almost 20% of children and teens in the United States are obese. The excess weight increases the risk of high blood pressure, heart disease, cancer, stroke, gallbladder disease, type 2 diabetes, and other serious conditions.

While there is no magic quick fix to drop pounds, medically sound strategies do exist. The Emory Bariatric Center helps people meet their weight loss goals with a multidisciplinary program including nutrition and exercise therapy, lifestyle education, pharmacotherapy, counseling, and liquid meal replacement. If necessary, as in Kay's case, surgery can help seriously overweight people reduce their size and improve their health status—sometimes dramatically.

The lap band procedure is one of the more frequently performed surgeries at the center. During the operation, a surgeon makes four to five small incisions in the abdomen and cinches a small band around the upper portion of the stomach. The band creates a small pouch below the esophagus



Six months after undergoing adjustable laparoscopic band surgery, Michael Kay has lost more than 140 pounds and is healthier.



that slows the passage of food into the remainder of the stomach, resulting in the patient feeling full sooner. By injecting or removing saline contained within the band, doctors can adjust the band for individual needs. The procedure also is potentially reversible.

"We place more lap bands than any other program in metro Atlanta," says bariatric surgeon **Edward Lin**. "This procedure has become popular because it is minimally invasive and reversible, and it doesn't change basic anatomy." In the overwhelming majority of Lin's patients, the surgery has proven a fix for type 2 diabetes and other obesity-related diseases.

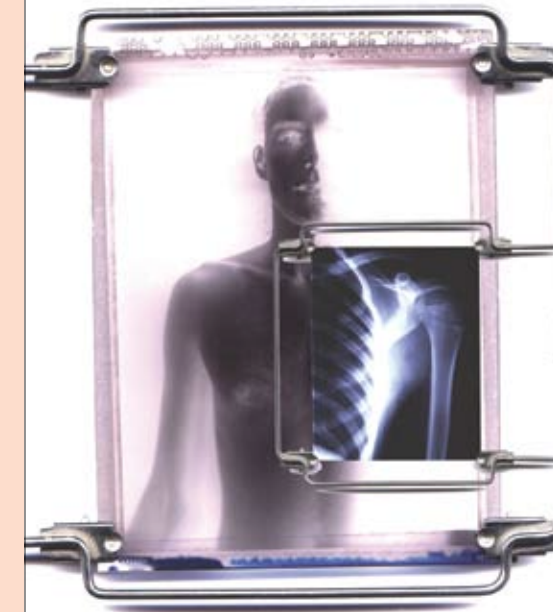
In addition to the lap band procedure, the bariatric center also offers gastric bypass, which reduces calorie and nutrient absorption by diverting food from the first

segment of the small intestine. And surgeons also perform a sleeve gastrectomy, in which they laparoscopically remove about 75% of the stomach, restricting food intake without intestinal bypass or malabsorption.

In January, the center received accreditation as a level 1 bariatric surgery center of excellence from the American College of Surgeons, an accreditation denoting the highest level of quality care for patients like Michael Kay. —Sherry Baker

For more information about the Emory Bariatric Center, see [emoryhealthcare.org](http://emoryhealthcare.org) or call 404-778-7777.

## Double Bundles



The key to long-lasting repairs of two common sports injuries could be surgical techniques that more closely reproduce natural, pre-injured anatomy. That's the approach taken by Emory's **John Xerogeanes** (known as Dr. X) and **Spero Karas**. The two orthopedic surgeons have pioneered new procedures for torn rotator cuffs in the shoulder and damaged ACL ligaments in the knees.

The rotator cuff is composed of muscles that surround the ball of the shoulder joint. Tendons associated with that muscle group can weaken with age, overuse, or injury, becoming vulnerable to tear. Karas is one of only two surgeons in the Southeast using

a new double-row arthroscopic repair for rotator cuff injuries, in which he secures the tendon to the bone at two sites rather than one.

In the traditional rotator cuff surgery, physicians implant a single anchor to secure the tendon. However, traditional anchors insert only to a depth of about 5 mm into the bone, whereas in actual anatomy, the insertion to bone is closer to 16 mm.

"If you take a tendon that has a 16-mm footprint and repair it with a 5-mm footprint, the repair is weaker, and the area of healing is only about one-third of normal size," says Karas. "The double-row technique is stronger and does a better job of restoring normal rotator cuff anatomy."

Karas and Xerogeanes follow a similar orientation in repairing ACLs in selected patients. (Dr. X currently performs the highest number of double bundle ACL repairs in the Southeast.) They use two grafts (with two tunnels in the femur and two in the tibia) to replace the injured ACL. By contrast, standard ACL reconstruction uses a single graft with one tunnel in the femur and one tunnel in the tibia.

The ACL controls both forward and backward movement and twisting of the knee, and the double-bundle duplicates this movement. According to Dr. X, studies have shown it to be superior to standard reconstruction in controlling knee motions—providing an increase in control that should decrease risk of further injury and preserve the patient's knee.

Good candidates for the procedure are patients whose previous ACL reconstruction has torn again and patients at risk for further injury due to mechanical reasons. Knock-kneed people and tall, young, loose-jointed female athletes top the list. —Sherry Baker

**WEB CONNECTION** For more information on ACL and rotator cuff repairs at Emory, call HealthConnection at 404-778-7777 or visit [emoryhealthcare.org](http://emoryhealthcare.org).

## Our newest docs

Emory Healthcare recently welcomed these physicians and specialists to bring patients the best in quality health care in Atlanta, the Southeast, and the nation:

### Cardiology and internal medicine

Scott Anderson  
Keith Ferdinand  
Cornelius Flowers  
Maurice Harris  
Azizul Hoque  
Martha Smith  
Abhay Trivedi

### Emergency medicine

Jeremy Ackerman  
B. Rhys Lam  
Michael Ross

### Geriatric and internal medicine

Adam Herman

### Hematology, internal medicine, and medical oncology

Gina D'Amato  
Rajni Sinha

### Internal medicine and rheumatology

Denise Stripling

### Physical medicine and rehabilitation

David Burke

### Ophthalmology

Timothy Olsen

### Radiation oncology and radiology

Jonathan Beitler  
Walter Curran

To schedule an appointment with any of these physicians, call 404-778-7777 or visit [emoryhealthcare.org](http://emoryhealthcare.org).



## Hypertension and teeth

CARDIOLOGIST DAVID HARRISON HAS AN UNUSUAL QUESTION FOR HIS PATIENTS WITH HIGH BLOOD PRESSURE: “HOW ARE YOUR TEETH?”

As director of cardiology at Emory, Harrison and colleagues are testing whether the bacteria that cause gum disease also produce substances that amplify the effects of angiotensin, a hormone that ramps up blood pressure. The interest in oral health arises from his laboratory’s research into how the body controls blood pressure.

Doctors who study high blood pressure tend to view the condition through the lens of the body part with which they’re most familiar, says Tomas Guzik, a postdoctoral fellow studying with Harrison. Some say the kidney is the most important. Others concentrate on the brain or the walls of blood vessels.

Harrison and Guzik hypothesized that the blood cells that travel between the kidney and brain might be orchestrating the physiologic changes that lead to high blood pressure. In investigating this connection, they found that T cells—the white blood cells that orchestrate an immune response against foreign invaders—get fired up by angiotensin and play a key role in raising blood pressure.

Angiotensin appears to drive T cells into the fat layer surrounding blood vessels, according to research the investigators published in the *Journal of Experimental Medicine* (Oct. 2007). The authors show that

mice without T cells have a blunted response to both angiotensin and to attempts to induce hypertension.

The findings begin to explain decades-old observations by doctors about conditions ranging from pre-eclampsia during pregnancy to psoriasis and rheumatoid arthritis. What all of those have in common is inflammation. T cells are activated to fight something inside the body, either bacteria that have worked their way into the gums or an internal auto-immune target. Tamp down the T cells, and blood pressure goes down too, clinical studies have found.

“When we see people with hypertension, it could be that they have chronic T cell activation,” Harrison says.

The research also suggests that medications already approved for treating HIV/AIDS might be used to modify the progress of hypertension. Several pharmaceutical companies have developed drugs that block the receptor CCR5, one of HIV’s doorways into T cells. It turns out that CCR5 plays a role in the response to angiotensin too, prompting Harrison’s interest in testing the connection further in clinical trials.

“Even after a patient’s blood pressure is lowered with current medications, there is still an underlying risk of cardiovascular disease,” he says. “We could find different ways to address that.”

Harrison may also have hit on a powerful incentive for people to be diligent in their brushing and flossing. —Quinn Eastmann



**T cells are activated to fight something inside the body, either bacteria that have worked their way into the gums or an internal target. Tamp down the T cells, and blood pressure goes down, too.**

## Your hospital visit, online

**Technology has come to the hospital room not only through sophisticated monitors and life-saving equipment but also now through the Internet.** Emory Healthcare recently launched a free, web-based service for patients to help them stay connected to friends and family dur-

ing a hospital stay. CarePages are private, personalized web pages that give patients another way to keep loved ones up to date on their progress and in turn receive messages and good wishes. The service, which may include photo galleries and message boards, is part of Emory Healthcare’s com-

mitment to patient- and family-centered care. “We believe that patients’ connectivity with families and friends is a vital component to improving and quickening health outcomes,” says Emory’s Chief Nursing Officer Susan Grant. For more information, see [carepages.com/emoryhealthcare](http://carepages.com/emoryhealthcare).

## Rockin’ for health

**It was all worth it to fourth-year Emory medical student Ben Levy when the music started and people jumped to their feet.** It became more than worth it when pop music singer Ben Kweller stopped in the middle of his set to talk candidly about depression.

For five years, Levy had worked toward this moment in April at Atlanta’s Woodruff Arts Center. His vision had spawned a nonprofit organization, an interactive website, and now this five-city tour with popular pop and R&B artists—all designed to educate young people about health.

Levy’s group, Music Inspires Health, is about connecting teens and young adults to health information they might otherwise tune out, says the 29-year-old executive director. The behavior-related health topics it takes on include smoking, eating disorders, depression, HIV prevention, and drug abuse. To make sure audiences hear

those messages, short films and quick messages from performers on disease prevention and health promotion are interspersed with musical sets. The films are the work of young directors, and the messages presented during concerts are drawn from two years of research with student focus groups. Those messages also are vetted for accuracy through an advisory board of distinguished physicians and researchers.

“Music brings people together and reaches people that didactic medical journals, *The Economist*, and the *Atlanta Journal-Constitution* don’t,” says James Curran, a member of the advisory board and dean of Emory’s Rollins School of

Public Health. “People at this age are at a stage in their lives when it’s very important to protect their health. This is particularly important for health conditions that may have an immediate or long-term impact such as mental health, smoking, or seatbelt use.”

Taking on those subjects and others, the Music Inspires Health team has worked hard to make the material as interesting as it is informative. “We don’t want to hit people over the head,” says Levy. “The whole point is not to lecture the kids but to make them more aware.”

And the response has proved positive—from parents who want



**Ben Levy’s vision spawned a nonprofit organization, an interactive website, and a music tour to spread the message of health.**

to help with the project to young people excited to hear the musicians to the performers themselves. “The artists are on board because they love the idea,” Levy says.

That’s why singer-songwriter Ari Hest signed on. “I hope the audiences come away with a broader knowledge of how to make healthy decisions and they have a great time,” he says. The reasons are more personal for Kweller. “I have dealt with depression and suicide in my life. I have seen people ridiculed for being different and seen the long-term effects that this causes. We need to open our eyes and learn how to deal with these issues and not be afraid of our reality. Let’s teach kids the facts about life here on earth and the consequences of making wrong choices.”

The national concert tour includes performances in Boston, New York City, Washington, Chicago, and Los Angeles in addition to Atlanta. Joining Hest and Kweller on one of the stages are musicians Toby Lightman, Ingrid Michaelson, Victor Wooten, and R&B singer Trey Songz. Now that’s inspiration. —Dana Goldman



**MUSIC INSPIRES HEALTH**



**Pop music singer, Ben Kweller, has joined forces with Music Inspires Health to help educate teens and young adults about smoking, eating disorders, depression, and drug abuse.**

**WEB CONNECTION** For more information on what is positioned to become an annual concert tour, visit [www.musicinspireshealth.org](http://www.musicinspireshealth.org).



## Talking with the animals

JARED TAGLIALATELA IS NO DR. DOOLITTLE, but the researcher at Emory's Yerkes National Primate Research Center does have a new understanding of how chimps communicate.

His research, published in the online edition of *Current Biology* (Feb. 28, 2008), finds that the area in the chimpanzee brain involved in producing manual gestures and vocalizations is similar to the Broca's area of the human brain. Broca's area is one of several critical regions associated with language and speech.

What this suggests to Tagliatalata and his colleagues is that "chimpanzees have, in essence, a language-ready brain," he says. "Our

results support that apes use this brain area when producing signals that are part of their communicative repertoire."

For the study, the Yerkes researchers used positron emission tomography to monitor chimpanzee brain activity during two tasks. During the communication



task, a researcher sat outside the animal's home enclosure with pieces of food. After a set time, the researcher took the food and left the area. When the researcher was present, the chimpanzees produced gestures and vocalizations to request the food.

For a baseline task, the researcher again approached the chimpanzee enclosure with food, but this time, the animals received small stones to exchange for the food. After returning a fixed number of stones, each chimp was rewarded with a small piece of food.

"The chimpanzees were not communicating with the researcher in this task. They were simply returning stones," says Tagliatalata. "We included this task to make sure we really were looking at neural activity associated with communicative signaling and not simply normal motor behaviors."

Both tasks showed significant brain activity, but researchers found considerably greater levels of activity during the communication task as compared to baseline in the area of the brain similar to Broca's. They plan to do further studies of chimpanzee brain activity by examining perceptions using prerecorded chimpanzee vocalizations. And they want to determine whether brain activity is the result of manual gestures, vocalizations, or—as is the case with humans—communicative signals that are independent of either.

## Childhood nutrition and grown-up economics

THE PATHWAY OUT OF POVERTY COULD START IN THE FIRST TWO YEARS OF LIFE IN A SMALL BOWL OF MUSH.

Researchers have found that improving nutrition in children under the age of 3 leads to more productive adults with significantly higher incomes. Published in *Lancet* (Feb. 2, 2008), the study is the first to demonstrate that improving nutrition in early childhood has enormous impact on long-term economic potential.

Guatemalan boys who received a high-protein, high-energy supplement known as atole during their first two years of life earned 46% higher wages, on average, as adults. Those receiving atole in the first three years earned 37% higher wages. However the boys who first received the supplement after age 3 failed to gain economic benefits.

"The study confirms that the first two years of life are the window of opportunity when nutrition programs have an enormous

impact on a child's development, with life-long benefits," says Reynaldo Martorell, chair of the Hubert Department of Global Health at Emory's Rollins School of Public Health.

Martorell and colleagues at the Institute of Nutrition in Central America and Panama began the investigation in 1969 in four rural communities in Guatemala. Until 1977, these villagers participated in a food supplementation program. Investigators wanted to know if atole improved child growth, and it did—but only for the first three years. At that time, they were unable to show a link between improved nutrition and cognitive development.

However, in subsequent years, a link did begin to emerge. In the 1980s, Martorell traced a link between children who had received atole to smarter teens. Using data collected from 2002 to 2004, Martorell and colleagues at Emory University, the International Food Policy Research



Institute, the University of Pennsylvania, and Middlebury College confirmed that improved nutrition in childhood led to higher intellectual achievement in adulthood. In their *Lancet* paper, the group analyzed data about hours worked and wages received and found that improved childhood nutrition also improved economic productivity in adults.

Martorell says the research upholds a policy of improving childhood nutrition in developing countries as a wise economic investment.

## The way of the foot and the fist

**David Burke, the new chair of Rehabilitation Medicine at Emory, has plenty of experience under his belt. In fact, he has several belts, all black in Taekwondo.\***

Burke has practiced, studied, researched, and taught Taekwondo for much of his adult life, "certainly longer than I've practiced medicine," he says. Some of his research gained the attention of the U.S. Department of Homeland Security, which invited him to serve as the chief medical adviser for the task force on flight attendant anti-terrorist self-defense.

"We worked on several scenarios that would have to be handled under great stress," says Burke, who helped design and test the training protocol for in-flight personnel. "One of the studies we completed while working on this process was taken to the oval office for review by the president."

Burke describes this work as true translational research, where the goal is to see the results placed into a working national policy.

Some of his research also benefits from experience as a sports medicine physician and teacher of the martial arts. Burke believes a knowledge of force generation as well as the mechanisms and physics of common injuries have allowed him to teach his students and treat his patients more effectively.

Prior to joining Emory's medical school this past fall, Burke was one of the founding members and the first program director of the Department of Physical Medicine and Rehabilitation at Harvard. He also served as medical director of the post-acute brain injury program at Spaulding Rehabilitation Hospital there.

He is perhaps most widely known in the academic world for his research and clinical expertise in treating patients suffering severe brain injuries, both traumatic and nontraumatic. Much of his research focuses on understanding the mechanisms, the long-term outcomes, and neurochemical interventions to improve outcomes.

Research often yields surprising results for scientists, but in the end, it helps answer important questions, says Burke. For example, recent findings reported in the *American Journal of Physical Medicine & Rehabilitation* (Jan. 2008) by Burke and others called into question previous assumptions that overweight people recover



By day, David Burke runs Emory's Department of Rehabilitation Medicine. After hours, the state champion of Taekwondo trains with his daughter at a local studio.

*\*A loose translation of Taekwondo is the way of the foot and the fist.*

more slowly after acute injury. In the study, obese patients undergoing treatment at an acute rehabilitation hospital actually recovered faster than patients of normal weight. Burke notes that this was

true not only for those with brain injury, but also those with stroke, spinal cord, and cardiovascular injury. Determining the reason behind this result is a focus of ongoing inquiry.

When Emory approached Burke to join its faculty, he noted that the offer had a familiar ring. "When I joined the effort to start the department at Harvard, it was

a huge undertaking with wonderful potential," he says. "Physical medicine and rehabilitation as a specialty was relatively obscure and the potential to expand was enormous."

A discussion with Emory faculty convinced Burke to consider a change. "There is a tremendous sense of community and camaraderie here that I have never seen before at a medical school," he says. "But similar to Boston 15 years ago, I see that physical medicine and rehabilitation is an underdeveloped medical specialty at Emory with a very real potential to become great."

—Valerie Gregg



## Portraits of a profession: Nursing around the globe

Through images and words, *Nurse: A World of Care* celebrates the vital and often invisible work of nurses around the world. With introductions by former President Jimmy Carter and Marla Salmon, senior editor and outgoing dean of Emory's Nell Hodgson Woodruff School of Nursing, the book presents a portrait of the nursing profession. Its stories are told through the photographs of Karen Kasmauski and the writing of Peter Jaret, frequent contributors to *National Geographic*.



The images in the book crisscross the planet from Asia to Africa to North and South America. In Bangladesh (above), a nurse uses simple rehydration therapy to treat a patient with cholera, which often breaks out among adults in the summer. In Honolulu (left), a nurse administers a little comic relief along with her practical tending. In Manila (below), a young nurse cares for an elderly patient, bringing nurturing and listening to her technical know-how.



"Too often nurses' work goes unnoticed," says Salmon. "With the growing global shortage of nurses, their invisibility is to the detriment of all people." She wanted to tell these stories not only to celebrate the profession but also to help improve its future. Sales of the \$29.95 book will contribute to international nurse scholarships at Emory.

**WEB CONNECTION** To see a slideshow about *Nurse: A World of Care*, visit [whsc.emory.edu/nurse.cfm](http://whsc.emory.edu/nurse.cfm)



## Emory In-flight

This March, Emory University took to the skies with the first in a series of advertisements in Delta's Sky magazine. The first ad featured the research of Frans de Waal, a professor at Emory's Yerkes National Primate Research Center who was the first to discover that animals resolve conflicts and make up after fights. deWaal's findings changed how behaviorists view animals and sparked new research on how humans resolve conflicts.

Designed to raise the profile of Emory, the ad campaign is sharing the university's vision and influence with a national audience. As a subsequent ad in May reads: "Emory is where people who believe they can transform the world are encouraged to do so."



## Why we chow down

YOU CAN NEVER BE TOO RICH OR TOO THIN, GOES THE OLD SAYING, BUT NOW RESEARCHERS HAVE FOUND A REASON FOR WHY THOSE AT THE BOTTOM OF THE HEAP MAY WEIGH MORE. IT'S STRESS.

In studying female rhesus macaque monkeys, investigators at Yerkes National Primate Research Center have found that the socially subordinate members of the group over consumed calorie-rich foods at a significantly higher level than did the dominant females in the group.

Female rhesus macaques living together establish a dominance hierarchy that maintains stability in the group through continual harassment and the threat of aggression. To track the reaction of the macaques to this stress, the researchers followed feeding patterns of the monkeys, who were given access to a sweet but low-fat diet and subsequently a high-fat diet for 21 days each. Between each test period, the group had access only to standard monkey chow.

The socially subordinate females consumed significantly more of both the low-fat and high-

fat diets during a 24-hour period. By contrast, the socially dominant females in the group ate significantly less and restricted their feedings to daytime hours.

This difference in feeding behaviors led to an accelerated weight gain and an increase in fat-derived hormones in the less powerful monkeys. Mark Wilson, chief of psychobiology at Yerkes, believes

this observation may suggest profound changes in metabolism and the accumulation of body fat. "Subordinates may be on a trajectory for metabolic problems," Wilson says. "They prefer the high-fat diet and, as a result of the stress of being a subordinate, they have higher levels of the hormone cortisol."

The study, published in May in the online edition of *Physiology and Behavior*, is a critical step in understanding the psychologic basis for the sharp increase in obesity across all age groups in the United States since the mid-1970s. The authors next will attempt to determine the neurochemical basis for why the subordinate females overeat.





# They have a dream

HealthSTAT is taking its grassroots advocacy for better health care for Georgians from the classrooms to the Capitol.

By KATE NEUHAUSEN and ANJLI AURORA

On the wall of our 7' x 11' office is a quote by Maryanne Radmacher: "Stand often in the company of dreamers; they tickle your common sense and believe you can achieve things which are impossible." Stacked against the walls are boxes of T-shirts for our Cover the Uninsured Week, bags of buttons for the Grady Is Vital campaign, and bins with plastic food models for a nutrition and physical activity program we organize in the community. On the desk is a stack of *Atlanta Journal-Constitution* newspapers with a front-page article about HealthSTAT and our grassroots campaign to mobilize hundreds of Georgia students and residents to save Grady Hospital. The headline reads "Their First Patient? Health Care."

HealthSTAT, or Health Students Taking Action Together, is a student-run, nonprofit organization founded seven years ago at Emory. With a mission to create a statewide community of health professional students crossing disciplines and engaging in education, advocacy, and service, we are the only organization of this kind in the nation. Our focus is on HIV/AIDS prevention and policy, child obesity prevention, and health disparities and access to care. Public health indicators in these areas are abysmal in Georgia, and millions of Georgians struggle to access health care every year. As Georgia's future health professionals, we are determined to improve those statistics and to make our mark on the future of health care.



Kate Neuhausen, a newly-minted Emory doctor, coordinated HealthSTAT's Grady Is Vital Campaign. Anjli Aurora, an Emory family nurse practitioner and nurse-midwifery alumna, is president of HealthSTAT.



One major effort is the Grady Is Vital campaign that HealthSTAT initiated last fall in response to students' concerns over the future of the Grady Health System. We brought together more than 200 health professional students and residents from across Georgia, including those at Emory, Morehouse, Medical College of Georgia, Mercer, Georgia State, and Philadelphia College of Osteopathic Medicine.

When students first learned of the crisis surrounding Grady, many people told us to watch and wait. We watched, and we listened. We heard our patients telling us that they were praying every night for Grady to stay open. They shared their fears that they would have nowhere to go for health care if Grady closed. Because so many of us came to medical, nursing, or pharmacy school because of our desire to care for those in need, watching and waiting was not an option.

As health professional students, we saw three options: get depressed, angry, or involved. Instead of giving in to despair, we decided to take action to fulfill the idealistic goals that attracted us to the health professions in the first place. Our education was too important for us to sit on the sidelines, watching the debate over Grady play out without the voices of Georgia's future. So the students organized to advocate for Grady patients and Georgia's future.

Our campaign started as an extensive grassroots advocacy effort with presentations that integrated education with action in Georgia schools. Students delivered more than 600 handwritten letters to the Governor, Lt. Governor, and Speaker of the House,

encouraging them to support Grady, fund a statewide trauma network, and increase Medicaid reimbursement rates. HealthSTAT organized a rally at Grady Hospital, drawing more than 300 students, residents, and faculty to share our message that this debate must focus on patients, not politics.

Once we understood the context for Grady's crisis, we organized advocacy at the local and state levels. More than 100 students stood together at a critical Fulton County hearing, and 120 students attended a DeKalb County hearing as HealthSTAT leaders testified on the importance of Grady's mission to care for the uninsured and underserved. White coats filled the hearings, capturing coverage on all the major news channels.

Based on extensive research, we created fact sheets for state legislators on Grady, primary care, trauma, Medicaid, and graduate medical education. Ben Harbin, chair of the House Appropriations Committee, sponsored a breakfast at the Capitol for HealthSTAT. And more than 50 students from across Georgia along with residents from five specialties successfully lobbied legislators to support Grady.

As the campaign continued, students and residents met one on one with key state leaders to advocate for Grady and organized tours of Grady for legislators to see firsthand that Grady is a vital safety net hospital for the poor and underserved. Rep. Ed Lindsey, speaking from the floor of the Georgia

House of Representatives, said that "touring Grady with HealthSTAT students was one of the most eye-opening experiences in my four years in the state legislature."

We started the Grady Is Vital Campaign to give our patients a voice and to unite students in a movement to help Grady thrive. In the process, we experienced a crash course in health policy and realized the tremendous power of our voices as Georgia's future health professionals. In the end, we played a significant role in the political process and helped change the destiny of a hospital.

Today Grady remains open, run by a new nonprofit board with renowned civic and business leaders in Atlanta that has secured a \$200 million donation and is committed to initiating more fundraising. HealthSTAT achieved its legislative advocacy goals of increasing Medicaid reimbursement rates and graduate medical education funding and has continued to lobby for trauma funding.

And we're not going away. We remain committed to creating a cadre of health professionals who have the skills and vision to improve health for all.

The most common question we are asked is, "on top of extremely demanding school schedules, why do you put so much time into HealthSTAT?" Our answer: because we believe a healthy future is possible for all Georgians. Because we believe we have a voice and an obligation to shape our health care system. Because we want to dream. ☐

**WEB CONNECTION** To learn more about HealthSTAT or to make a donation, visit [www.healthstatgeorgia.org](http://www.healthstatgeorgia.org). Also see the Grady Is Vital Campaign at [www.gradyisvital.org](http://www.gradyisvital.org).



## THE LAST WORD

*“Slip, slop, slap, wrap. Slip, slop, slap, wrap. Slip, slop, slap, wrap.”*

**The third-graders in Ms. Jackson’s class at Medlock Elementary chant the slogan, growing louder with each round.** “Good, you remembered,” says Laura Doerr. Decked out in a rainbow wig, she looks more like a clown than a first-year medical student at Emory, but the funny clothes are part of a plan to teach these elementary students about sun protection. A dozen first- and second-year Emory students first came to these classes in January to teach sun safety. Now the teams are back to reinforce the message.

Their message is simple—slip on a shirt, slop on some sunscreen, slap on a hat, and put on some wrap-around sunglasses. The curriculum is part of SunSmart Georgia, a program that enlists medical students to teach elementary school students about sun protection. Each year, Emory med students fan out in classrooms in one local school to spread the word about both the good and harmful effects of the sun to more than 300 elementary students.

While the teaching sessions are designed to be fun, the reasons they are needed are daunting. Skin cancer is a problem of epidemic proportions and the most common type of cancer in the United States, with 9,600 deaths occurring each year. Kids in particular are at risk because half of the lifetime exposure to ultraviolet (UV) radiation occurs during childhood.

“Both sets of students enjoy the interaction,” says Emory dermatologist Mary Spraker. “The medical students have an opportunity to



teach in a very creative way, and the children are very receptive to these young doctors-to-be.”

Ms. Jackson’s class is no exception. The children are eager to try out bracelets with ultraviolet beads that turn purple in the sunlight. “When you go outside, you’ll know when you’re getting too much sun,” says Seema Kini, a med student wearing a sombrero.

As she passes out the trinkets, the class takes up the chant. “Slip, slop, slap, wrap. Slip, slop, slap, wrap. Slip, slop, slap, wrap.”  
—Rhonda Mullen



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