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WINTER 2010

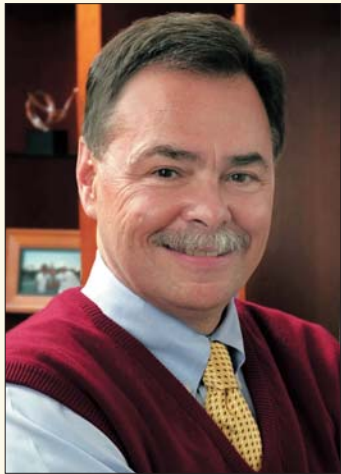
EMORY | health

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

REDIRECTING NATURE

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FROM THE EXECUTIVE VP



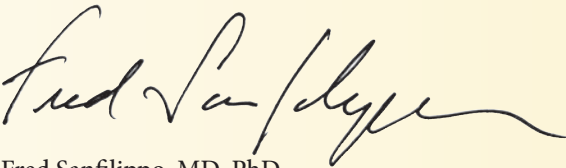
More with less

The economic downturn of the past year has posed a challenge for all of us, and it has left more Americans in need than at any other time in recent history. We're all being asked to do more with less, but when a neighbor is in need, we somehow pull together to do what we can to help. That's just what has happened here in Emory's Woodruff Health Sciences Center (WHSC) over the past year. As the need in our community has grown, we've risen to the occasion to meet it.

As you read through this issue of *Emory Health*, you'll learn how WHSC has been meeting the need over the past year by offering millions of dollars in compassionate, cutting-edge, and high-quality care to those who need it most—throughout the city, the state, and the world. In fact, as more people than ever before turned to us for help, we have responded in kind, and the more than \$48 million in charity care that we have provided last year to the poor, the uninsured and underinsured, children and seniors, and many others in need has made a lasting and tangible difference in the lives of many thousands of people.

You'll also learn about some of the many ways WHSC is driving advances that serve humanity by improving health. From groundbreaking transplant research to suicide prevention programs to dental care for seniors, Emory's Woodruff Health Sciences Center is pioneering truly transformative change in health care. As a test bed for medical innovation, WHSC is developing and refining new diagnostic and therapeutic methods that are saving and improving lives—and we're delivering them to the people who need them the most.

So in spite of a year that has challenged us all, WHSC continues to make significant strides toward transforming health and healing ... together with your continued support. Thanks for all you—our faculty, staff, students, and community—do to help those who are in need.



Fred Sanfilippo, MD, PhD

Please share your feedback at evphafeedback@emory.edu.

The more than \$48 million in charity care that we provided last year to the poor, the uninsured and underinsured, children and seniors, has made a lasting and tangible difference in the lives of many thousands of people.

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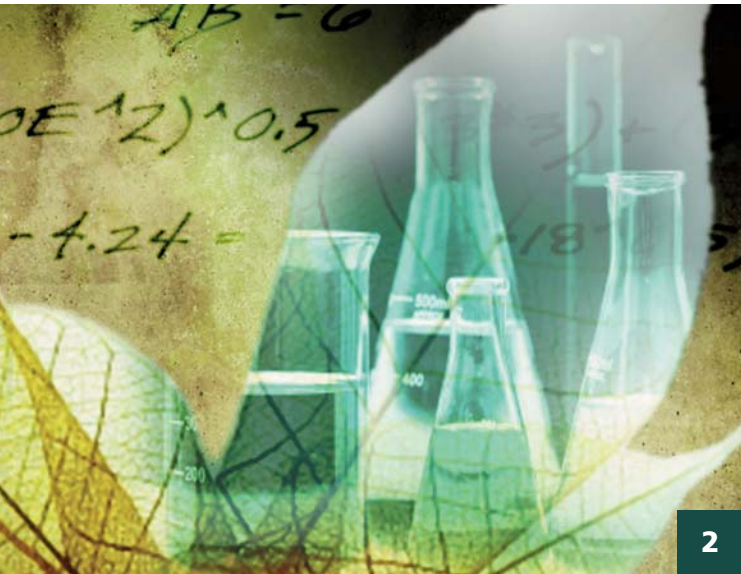
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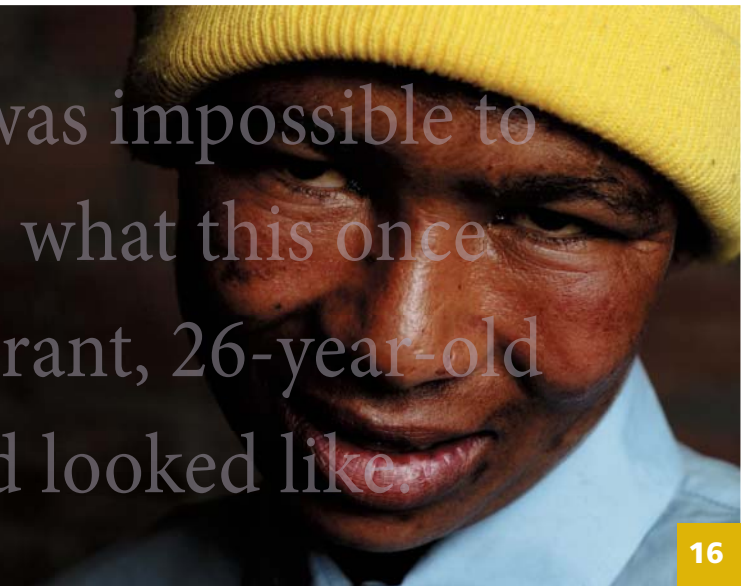
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What do you think? *Emory Health* welcomes your comments—pro or con—about topics and issues covered in this magazine. Please send comments, letters to the editor, address changes, and other correspondence to *Emory Health*, 1440 Clifton Road, 150M, Atlanta, GA 30322; email rhonda.mullen@emory.edu; or call 404-727-8166.

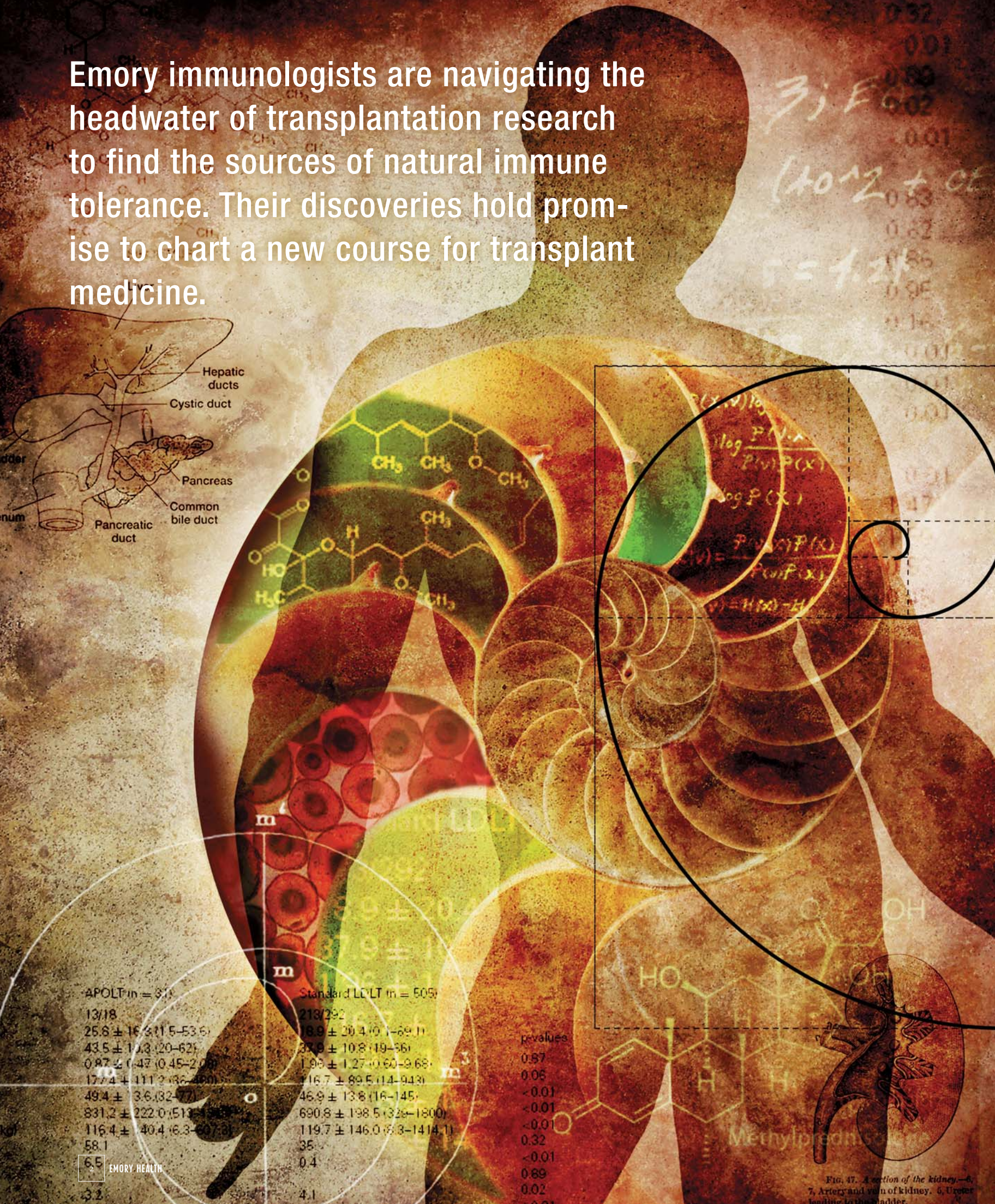


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The mother was embarrassed. Trina's father had abandoned the family, lived out of state, and did not know or support the child, she said, but when Medicaid discovered that the father had insurance, they removed Trina from their rolls. Trina's mother had been able to pay for some insulin out of her own pocket but . . . well, not as much as before.

10

Emory immunologists are navigating the headwater of transplantation research to find the sources of natural immune tolerance. Their discoveries hold promise to chart a new course for transplant medicine.



Changing nature's course

By VALERIE GREGG • Illustrations by ALICIA BUELOW

The human immune system is fluid, dynamic, always changing. The quest to understand it resembles the classic mathematical problem of circles within ever larger circles—each question begs another, then another, and on into infinity.

True immune tolerance occurs when one's immune system accepts foreign tissue without mounting an immune response against it.

The inability to achieve true immune tolerance has dogged transplant medicine since the first organ transplants were attempted in the 1950s. Ever since, immunologists have followed one promising train of thought after another, running into numerous dead-ends along the way.

Emory transplant surgeon Kenneth Newell likens the immune response in transplant patients to an iceberg. A tiny tip pokes innocently above the waves, while the bulk of it lies hidden below the surface.

“Under the ice, and deep inside, there’s a lot happening on many overlapping levels that we can’t see,” Newell says. “We often don’t realize what’s happening until a patient suffers an overwhelming rejection or a bad infection or cancer.”

Emory scientists are seeking to uncover what’s below the surface to change the course of nature.

Enough but not too much

Lifetime immune suppression is an enormous burden for those who’ve had a transplant. Patients take about 30 expensive pills a day, leaving them vulnerable to fungal, viral, and bacterial infections. The drug regimens include the long-term use of steroids, which can lower protective immunity and increase the risk of kidney and cardiovascular disease. Unusually aggressive lymphomas and skin cancers are also risks.

The most commonly transplanted organs, kidneys, are targets for the toxicities of cyclosporine, a calcineurin inhibitor that is a standard immunosuppressant drug. Eight to 10 years after the original transplant, replacement of transplanted kidneys is far too common. In fact, immunosuppressant drugs themselves can hasten the need for a replacement transplant. They can cause hypertension or renal disease, leading to organ failure in 20% of patients.

Newell leads the Emory arm of the NIH Immune Tolerance Network, an alliance of transplant research centers working to uncover the basic biological features of clinical tolerance.

“We try to tweak the amount of immunosuppression, so patients receive just enough but not too much,” says Newell. “Our techniques remain rather crude. We start everyone on the same regimen. If someone gets more infections or cancers, we give them less. If they have rejection, we give them more.”

Ideally, physicians will learn to predict how each patient’s immune system will respond to a transplant. Then, medications could be titrated individually without the need to wait for rejection or infections to indicate whether the dosage is too strong or too weak.

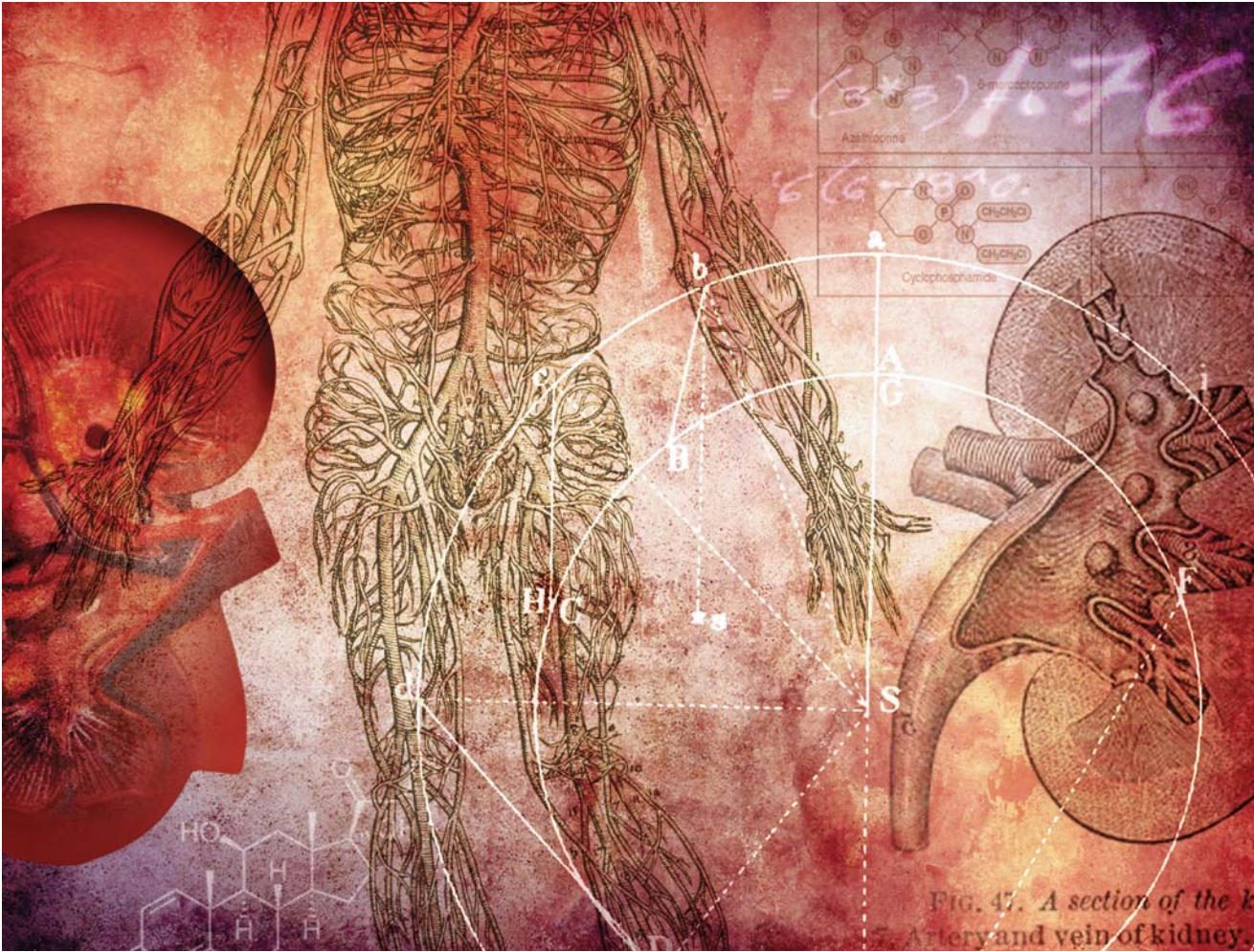
Unique immune signatures to measure how much immunosuppression each patient needs to control rejection is a prime example of personalized, “predictive” medicine, says Newell, who is working with scientists at the Emory Transplant Center to pin down immune signatures. These may involve gene expression, proteins, enzymes, or some combination thereof.

Lowering doses

Identifying indicators of an immune signature would go a long way toward efforts to induce complete immune tolerance for transplanted organs—the ultimate goal of the transplant clinicians at Emory.

Allan Kirk, a Georgia Research Alliance eminent scholar in transplantation immunology, leads a multicenter study involving long-term transplant patients who have done well on low doses of immunosuppressants. These patients are put on a carefully supervised dose-reduction program and monitored closely.

Newell, who directs Emory’s living donor kidney program and works with Kirk on the study, hopes to learn what is special about patients who don’t need as much immunosuppression as usual. “We’d like to know what’s different, whether it’s gene expression or a certain type of cell,” he says. “It would be nice to find a ‘signature’ to predict who needs more



				
<p>CHRIS LARSEN, executive director of the Emory Transplant Center, has spent his career researching ways to help transplant recipients achieve permanent, long-term acceptance of organs.</p>	<p>THOMAS PEARSON, co-founder with Larsen of the Emory Transplant Immunology Lab, works on understanding the central and critical role that T cells play in the rejection of transplanted organs.</p>	<p>STUART KNECHTLE, surgical director of liver transplantation at Emory, has helped push liver transplant forward in Georgia, performing several firsts in the state, including the first domino liver transplant.</p>	<p>ALLAN KIRK, a Georgia Research Alliance eminent scholar, previously headed NIH’s transplant division. He is studying an alternative treatment to calcineurin inhibitors to prevent graft rejection in monkeys.</p>	<p>KENNETH NEWELL, director of the living donor kidney program, leads the Emory arm of the NIH Immune Tolerance Network, an alliance working to uncover the basic biologic features of clinical tolerance.</p>

and who needs less. Then we could just start everyone on the correct dose. But until we have the science to back it, that exposes a lot of people to the risk of rejection.”

In the meantime, important clues lie in studying patients who neglect to follow their doctors’ orders. “There are some people out there who simply stopped taking immunosuppressant therapy and remained perfectly well,” says Newell. “Some stopped because of infections or tumors. Some are rebellious. Many can’t afford the drugs. One person I talked to hasn’t taken any immunosuppression since the mid-1970s.”

Reducing unnecessarily high doses of immunosuppressant drugs in children who have kidney transplants is the aim of another study Kirk leads. Clinical Trials in Organ Transplantation in Children is a five-year, \$6 million NIH study by Emory’s medical school, Children’s Healthcare of Atlanta, and children’s hospitals at UCLA and Stanford. It seeks to find new ways to make drug therapy safer for children who have undergone kidney transplants.

Traditionally, immunosuppression doses for children are known to be higher than necessary. “Children are usually over-immunosuppressed,” says Kirk. “Their growth patterns come in fits and starts. To cover every possibility, we now give every child the same dosage, based on their weight when they come into the clinic. Even so, the immune system doesn’t necessarily grow in correlation with a child’s weight gain.”

Safer drugs?

A new type of anti-rejection drug may work better to blunt the natural immune response, preventing organ rejection but maintaining kidney function following renal transplantation. Emory transplant surgeons Chris Larsen and Tom Pearson were pioneers in developing and testing the new compound, known commercially as belatacept. Larsen, director of the Emory Transplant Center, says belatacept holds the promise to transform transplant medicine.

In 1991, he and Pearson, the Livingston Professor of Surgery, began studying a fusion

protein, made from a fusion gene, which is created by joining parts of two different genes. Combined with other agents, this protein showed promise in mice as a reliable immunosuppressant after renal transplant.

The resulting compound, now known as belatacept, is a costimulation blocker. Costimulation refers to one of many signals that T cells need from other cells to become fully activated. Belatacept binds to a specific site on certain cells of the immune system to block a signal necessary to activate T cells. Decreasing the activation of T cells decreases the number of T cells that can destroy grafted organs.

“Developing a mouse model wasn’t that difficult, as is usually the case,” says Pearson. The compound worked well in mice but not in nonhuman primates.

Based on the findings in the Emory lab, collaborators at Bristol-Myers Squibb tweaked the compound to work better in nonhuman primates. On further testing at the Yerkes National Primate Research Center at Emory, Larsen and Pearson found that the

new version of the compound showed enough promise in nonhuman primates to take the testing to clinical trials in people.

In the three-year phase III trial that wrapped up in August, patients were randomized into three groups of recipients, including those who received a more intensive regimen of belatacept, those who received less intensive dosing, and those who received cyclosporine.

The result? Patients receiving belatacept had the same patient/graft survival rates as those receiving cyclosporine. The patients on belatacept, however, had much better kidney function and better cardiovascular and metabolic profiles than those on cyclosporine. Also, belatacept was better tolerated and safer than cyclosporine. However, in this trial, cyclosporine still provided a lower rate and grade of acute rejection. Research is continuing, with belatacept set for imminent approval by the FDA.

Belatacept will enable the lives of many transplant patients to improve dramatically, says Larsen. “It’s amazingly rewarding to see something all the way through like this—from the research bench to the patient bedside,” he says.

A weekly dose

Other work is coming from the lab pipeline to patients. Allan Kirk and colleagues at the NIH and Yerkes are studying a less toxic combination treatment for immunosuppression that has shown promise in monkeys. The regimen opens the door for transplant patients to take medication once a week rather than a dizzying mound of pills every day, says Kirk.



Specifically, the treatment uses a costimulation blocker to interfere with the T cells that cause organ rejection without affecting other organs. In addition to the costimulation blocker, the treatment uses a protein called alefacept to subdue memory T cells.

By themselves, neither costimulation blockers nor alefacept could prevent rejection in monkeys. But the combination of the two, in addition to the transplant drug sirolimus, continued to work for months after the treatment ended in monkeys, as reported in *Nature Medicine* (July 2009).

Because alefacept and sirolimus already are used in humans, the researchers believe a clinical trial could be developed quickly to bring lab findings to patients.

Living donors

When it comes to transplants, some organs succeed better than others. A living donor organ usually fares better than one donated from a nonliving donor. “Younger is better than older,” says Newell. “Living is better than dead.”

Living donor kidney transplant programs make a big difference. One-third of kidney transplants at Emory and across the country now involve living donors.

“We’ve seen a five-fold growth in living donors in the past 15 years and not only among parents or siblings,” Newell says. “It’s people from church or school or friends. A middling match does just as well as a genetic match.

“Living donor kidneys last twice as long as organs from someone who is brain dead.

We used to think genetic matching determined success because living donors are so often relatives. But living donor kidneys are actually better because the organ has spent less time outside the body.”

Time stored is the crux of the problem with organs from nonliving donors. Brain death exacts harm as well. The more time that elapses after brain death, the shorter the organ’s life span after transplant.

The living donor team performed Emory’s first “paired” kidney transplant in October. In a paired transplant, two donors and two recipients swap kidneys. The new procedure helps those who need a kidney transplant and have a family member or friend who is willing to donate a kidney but whose organ is incompatible with their own because of blood or tissue type differences. With the paired transplant, four people come together. The first pair of donor-recipients has a healthy kidney that is incompatible for their pair but that is compatible for the second pair of donor-recipients. So the first incompatible pair donates a kidney that is compatible to the second pair, and the second pair donates the kidney that is incompatible with their pair

back to the first. The swap allows for two living donor transplants.

Learning from livers

Among transplanted organs, the liver has the fewest problems with immune rejection, according to Emory liver transplant surgeon Stuart Knechtle. “This fact means that we have more possibilities to explore,” he says. “It also means that there is much to learn from the immunology of the liver that might be useful elsewhere in the body.”

The second most commonly transplanted organ, the liver is highly vascular, and its transplantation requires a complicated, lengthy, and highly technical procedure. Expert surgeons are necessary for a liver transplant program, and in the past two years, Emory has recruited some of the top liver transplant surgeons in the nation.

During the past year, Emory’s transplant team has pushed the advances in liver transplant forward, performing several rare procedures and important “firsts” in Georgia. These procedures include a specialized transplant to replace the bile duct that runs between the liver and the gallbladder, a simultaneous heart-liver transplant, and liver

transplants for HIV-positive patients.

In July 2009 in a 10-hour procedure, Emory liver transplant surgeons performed Georgia’s first domino liver transplant, so named for the sequential nature of the surgeries. A liver from a deceased donor was transplanted into Jean Handler, 24, who had suffered since birth from maple syrup urine disease (MSUD), a genetic disease that keeps the body from breaking down certain amino acids. Handler’s own liver was transplanted into Robert Massie, a 53-year-old Harvard professor, who was born with hemophilia and had contracted hepatitis C and HIV in the early 80s from donated blood products.

The first transplant in effect cured Handler’s MSUD. Because MSUD does not exclusively affect the liver, its cause deriving from lack of a particular enzyme in all cells of the body, Handler’s own liver could be given to Massie because his non-liver cells make the missing enzyme.

Fewer than 100 of the procedures have been performed in the United States. Knechtle explains why: “Domino transplants are still quite rare in part because there are few situations that lend themselves to it.” While rare, domino liver transplants offer one more way to cope with the national shortage of organs available for transplant.

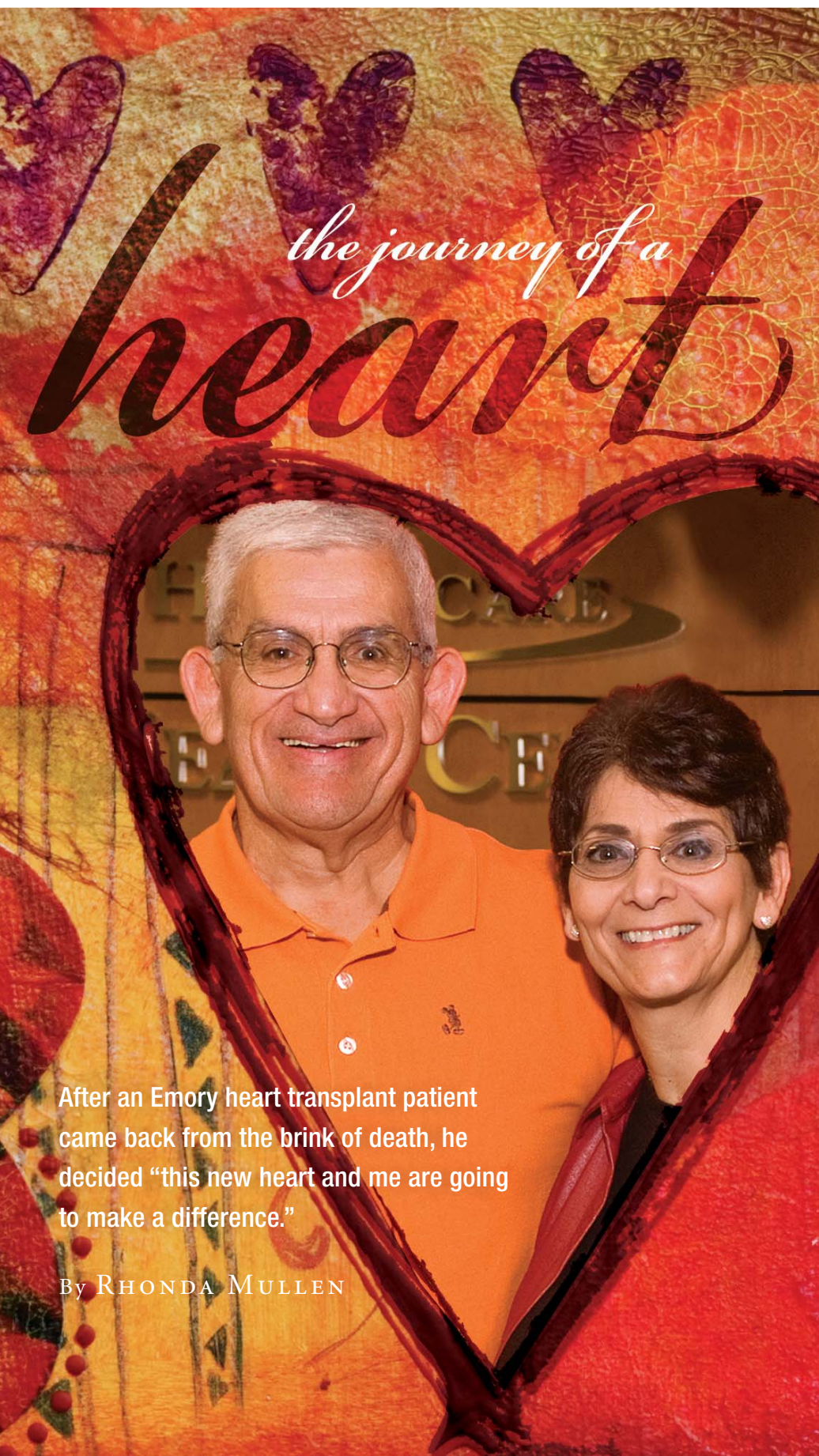
What else will we learn from the liver? And what will it teach us about an adaptable immune response? We don’t yet know. Our search, like the human immune system itself, is fluid, dynamic, always changing.

At a glance: The Emory Transplant Center’s comprehensive program is one of the busiest in the country, offering transplants in heart, lung, liver, kidney, pancreas, and pancreatic islet cells. In 2009, Emory surgeons performed a total of 230 transplants for adults and children. Emory brings together doctors, nurses, social workers, financial advisers, administrators, and a chaplain to foster a family-centered approach. Patients and families dealing with any stage of transplant may stay at the Mason Guest House, a private retreat that offers affordable lodging and is supported by the Carlos and Marguerite Mason Trust.

The Emory Transplant Immunology Lab, founded in 1991, is one of the nation’s leading laboratories working to achieve true immune tolerance after transplant and to free patients from the need for continuous drug therapy. Current programs are exploring less toxic medications for kidney, pancreas, liver, lung, bone marrow, composite tissue, and xenotransplantation (the transplantation of living cells, tissues, or organs from one species to another, such as from pigs to humans).

For more information, visit transplant.emory.edu, or call 404-712-4621.

WEB CONNECTION To view videos of Allan Kirk discussing transplant immunology in adults and children, visit whsc.emory.edu/r_memcells.html whsc.emory.edu/r_rejection.html Also see these videos of recent Emory transplant patients whsc.emory.edu/r_domino.html whsc.emory.edu/r_kidgrandma.html



After an Emory heart transplant patient came back from the brink of death, he decided “this new heart and me are going to make a difference.”

By RHONDA MULLEN

Joe Persichetti thinks of his life as a journey—from robust health to near death and back again. It’s been more than five years now since he received a heart transplant at Emory.

Persichetti was a busy working father and husband when he first encountered heart problems. He managed AT&T’s maintenance group, coached his sons’ baseball and football teams, and enjoyed holidays with his wife and their brood of five. He also was active in the community and at church.

But at age 40, Joe Persichetti saw his life take a dramatic turn. He had his first heart attack, followed by another when he was 47, and a third at 53. His youngest son turned 12 soon after his father’s third heart attack—the same age Persichetti was when he saw his own dad die at the breakfast table of a heart attack.

Despite several operations for bypass and installation of a pacemaker and a defibrillator, Persichetti’s heart continued to fail. He had to retire from his job of 37 years. He lost 64 pounds, his average blood pressure dropped so low that he had no energy to move, his kidney function slowed. Every other weekend for more than a year he was in the hospital so fluid could be drained from his heart.

He vividly remembers the day when his Emory cardiologist told him he needed a transplant. “Andy Smith sat me down and said, ‘You need a new heart.’ It was a shock. But he told me, ‘Listen, it’s okay, we’re going to take care of you.’ And it was. I always felt like he was treating me, not the disease.”

In the four months Persichetti spent on the transplant list, he remembers replaying his life’s journey in his head. He had no energy even to speak, and his priest came often to visit. One of his best friends would

stop by and just sit with him. No words could express what he saw his buddy going through. Meanwhile, his wife Vicky was worrying over him but still keeping the daily chores of life going—driving their youngest son to school, shopping for groceries, cleaning the house, paying the bills.

On November 3, 2004, the Persichettis got the news they were waiting for. There was a heart. “My wife was driving me to Emory, and I had tears streaming down my face. I knew that someone was being taken off life support, that in their darkest hour, a family was deciding to give me life,” Persichetti says. “That is the toughest part of my journey, knowing that someone had to die so that I might live.”

The experience he had in transplant was an incredible journey, Persichetti says. “I’m alive today because of the Emory team—Dr. Vega, Dr. Smith, Dr. Book, Dr. Lascar, Dr. Lutz, the lab techs who matched me with a donor, the nurses. I can still tell you the names of all my nurses and what shift they were on. They held my life in their hands. They kept me alive.”

The road taken

After transplant, however, Persichetti’s journey was far from over. In some ways, it was just beginning. “When I came back, I said, This heart and me are going to make a difference,” remembers Persichetti.

He joined the Georgia Transplant Foundation as a volunteer and mentor to help people facing transplant, and he’s at Emory University Hospital at least twice a week to talk to patients. He’s mentored more than 30 people to date. He doesn’t tell them that he knows how they are feeling because everyone’s journey is different, he says. He does tell them what he knows—that transplant is a process, that everyone is scared. He tries to take the fear of the unknown away.

He meets once a month with the Emory Health Support group, headed by chaplain

Wendy Wyche. He goes on the road to health fair screenings, local businesses, and high schools to talk about his own experience and as a volunteer for Life Link, a foundation that raises awareness for the need for organ donation. These five years out, his calendar is loaded with speaking events, and his wife Vicky goes with him. “Some people die waiting for a heart because we’re not educating people,” he says. The Persichettis want to change that.

He also is one of close to 100 current and



Joe and Vicky celebrate the anniversary of his “new birthday” each year by bringing a cake to share with members of his Emory heart transplant team.

former patients who are helping leaders and staff at Emory Healthcare improve the health system. The decision to involve patients can be tricky, Persichetti says, “because you have to listen to people who not only had a good experience but also to people who didn’t have a good trip.” Still it’s the right decision. “It makes you a better hospital.”

In one area, for example, Persichetti is helping Emory nurses tweak bedside reporting procedures at shift change. He reminds them that even though patients may be unable to respond, they can still hear and see.

He also reminds the nurses to bring the spouse into the process. The patient is in the bed getting all the attention, but the spouse

needs to be brought into the center too. “I’ve been married for 42 years,” he says. “My wife is a part of me. While I’m waiting for a heart, I need my wife and kids close to me. Family is as important as the medicine you give me.”

Persichetti suggested that more frequent updates be provided to patients in the laboratory waiting room on the sixth floor at Emory University Hospital, a place he knows intimately from having spent so much time there. Now, standard operating procedure is to have a nurse come out to update patients if their wait time extends beyond 20 minutes, and a new bulletin board gives patients additional information on upcoming health events like screenings or flu shots.

Persichetti also has visited many areas within Emory Healthcare in his role as patient advocate. He and his new heart willingly go wherever he is invited. Recently, he toured the labs to meet the technicians that process hundreds of vials of blood each day. He was there to remind them that they hold someone’s life in their hands, that each vial of blood belongs to a person, that the work they do—although behind the scenes and sometimes unglamorous or under-recognized—is important.

When the people with whom he speaks wonder if Persichetti has changed after his transplant, his answer is a resounding yes. “I think it’s made me more loving,” he says. He has seen two more grandchildren come into his family since his transplant (he now has six in all), and he’s not shy about speaking of his love for his family. He loves speaking to groups to raise awareness about giving life through transplant and particularly to young people. He loves Emory. “If it wasn’t for you, I wouldn’t be here,” he says. “That’s what gets you through—faith, family, and the care you receive.”



Hard dollars & plain sense

By SYLVIA WROBEL

Sometimes universities are regarded as ivory towers, focused more on thinking and ruminating and less on doing. **The truth is, universities are making very concrete contributions to their communities.**

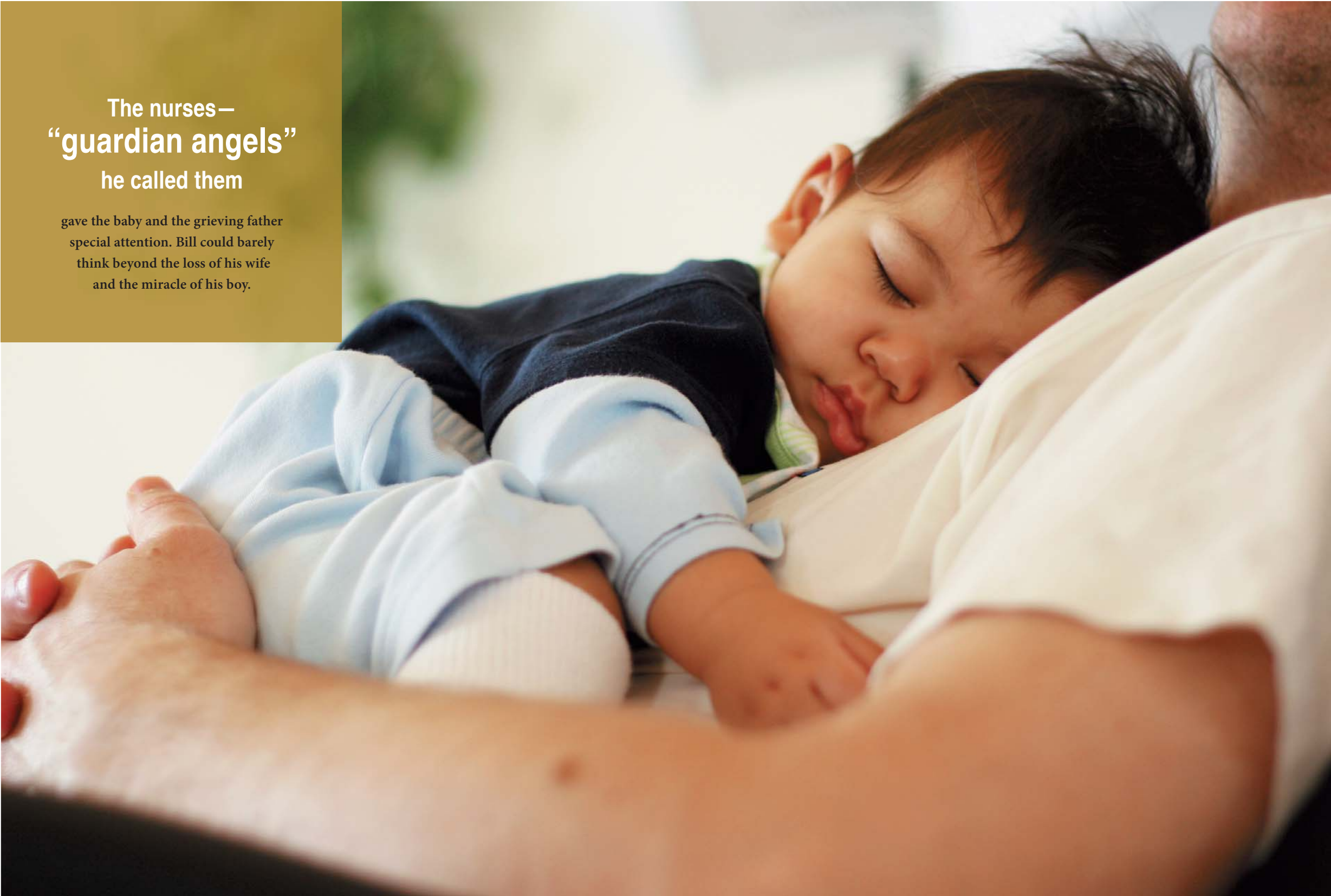
Sometimes these contributions translate into hard dollars, like the \$5.7 billion economic impact that Emory's Woodruff Health Sciences Center (WHSC) has on the metro Atlanta community each year. But sometimes their value can be measured best by their impact on people's lives. The following are vignettes that illustrate how Emory is meeting a critical need for health care, without regard for patients' ability to pay.

The worst and best of Christmases

This was supposed to be the happiest Christmas ever. Jen and Bill Arnold* were going to celebrate their first anniversary and, three months later, welcome the arrival of their first baby, a boy. What looked like a glitch—Bill being downsized out of his job—had turned into a new job paying an extra \$50 per week. Enough money that Jen could keep

The nurses—
“guardian angels”
he called them

gave the baby and the grieving father special attention. Bill could barely think beyond the loss of his wife and the miracle of his boy.



*INDICATES PATIENT NAMES HAVE BEEN CHANGED TO PROTECT PRIVACY.
SOME PHOTOS DO NOT REPRESENT ACTUAL PATIENTS.

working on her master's degree and stay home with the baby.

Then everything changed. Jen suddenly became lethargic and confused, struggling to talk. The next few days were a blur: an ER doctor trying to explain cerebral hemorrhage and the need to get Jen somewhere with expertise in high-risk pregnancy, the helicopter vibrating as it lifted into the air, then



Emory's Elaine Dahl (left) from patient financial services and Sandra Mullings (right) from social services worked hard to help Bill Arnold get insurance coverage and charity care after his wife's cerebral hemorrhage.

down again on the roof of Emory University Hospital Midtown. Hours after Jen arrived, unconscious, unresponsive, the two-pound baby was delivered by C-section in an effort to save his life and, perhaps, help his mother. Jen never saw him. Three days later, with Bill's consent, she was taken off life support.

For the next three months, Bill spent as much time as possible in Emory Midtown's neonatal intensive care unit, stroking his son's tiny hand through openings in the incubator. The nurses—"guardian angels," he called them—gave the baby and the baby's grieving father special attention. Bill could barely think beyond the loss of his wife and the miracle of his boy.

In the hospital's patient financial services office, other guardian angels were working on his behalf. Insurance coverage from Bill's previous job had ended December 15, while coverage from his new job had not begun until January 1. Jen's cerebral hemorrhage, the air flight, the cesarean, the NICU, all had taken place during the gap. His former and new employers tried to ensure that their insurance plans covered as much as possible, before and after the gap. What was not covered, however—about \$20,000—was classified as charity care under federal guidelines and became Emory Midtown's contribution. Bill was immensely grateful, but the money was not what he—or the doctors and nurses—were smiling about when he left the hospital holding his healthy son.

Second chance

Rebecca Moore remembers the massive light pole that appeared unexpectedly as she tried to leave the expressway exit. She remembers the impact, the sense that something had gone terribly wrong with her body, the Grady EMS team, ceiling lights flashing by as she was rushed into surgery. Then nothing.

She spent five weeks in a medically induced coma while a team of Emory trauma surgeons and Grady nurses repaired the jumble of injuries she had suffered. The collapsed lung, broken ribs, and leg fractures were standard high-impact fare, requiring multiple plates and screws. But trauma surgeon **Christopher Dente** and his team also had found massive bleeding in Moore's abdomen. The impact had torn both of her kidneys and severed her colon. In addition to kidney repair (and dialysis), she required a temporary colostomy and a skin graft to cover her abdomen. She remained in the hospital six weeks and returned, two or three times a week, for the following seven months.

The first time Moore asked about how much all this was costing—long before the final surgeries to reverse the colostomy and reconstruct her abdominal wall, before the return visits and twice-weekly physical rehab sessions—the bill had already exceeded \$500,000. Two months before the accident,



After an auto accident, Rebecca Moore (right) suffered a collapsed lung, broken bones, torn kidneys, and a severed colon. Social workers helped get the uninsured business owner enrolled in Medicaid to help with her bill.

the 32-year-old single mother had had health insurance, but that had vanished when she left her job to work in a restaurant while starting her own business.

Who would pay the mounting costs? During her coma, social workers had helped Moore's family apply for Medicaid. Eventually, the hospital and the Emory Medical Care Foundation, the billing agency for Emory physician services at Grady, received partial payment for the bill, even if only a fraction of the total cost. But the big payoff for Dente and the team who cared for her is the sight of a healthy, happy Moore, now a frequent volunteer at Grady.

The demands of diabetes

Trina's type 1 diabetes was diagnosed when she was 11 months old. She did not like it one little bit, not the pricks, the injections, or the limits on what she could eat, and especially not the visits to the diabetes doctor. Things got better last year when pediatric endocrinologist Inger Hansen prescribed an insulin pump. Trina* started laughing more, sleeping through the night, and waiting patiently while her mother changed the pump's insulin cartridges.

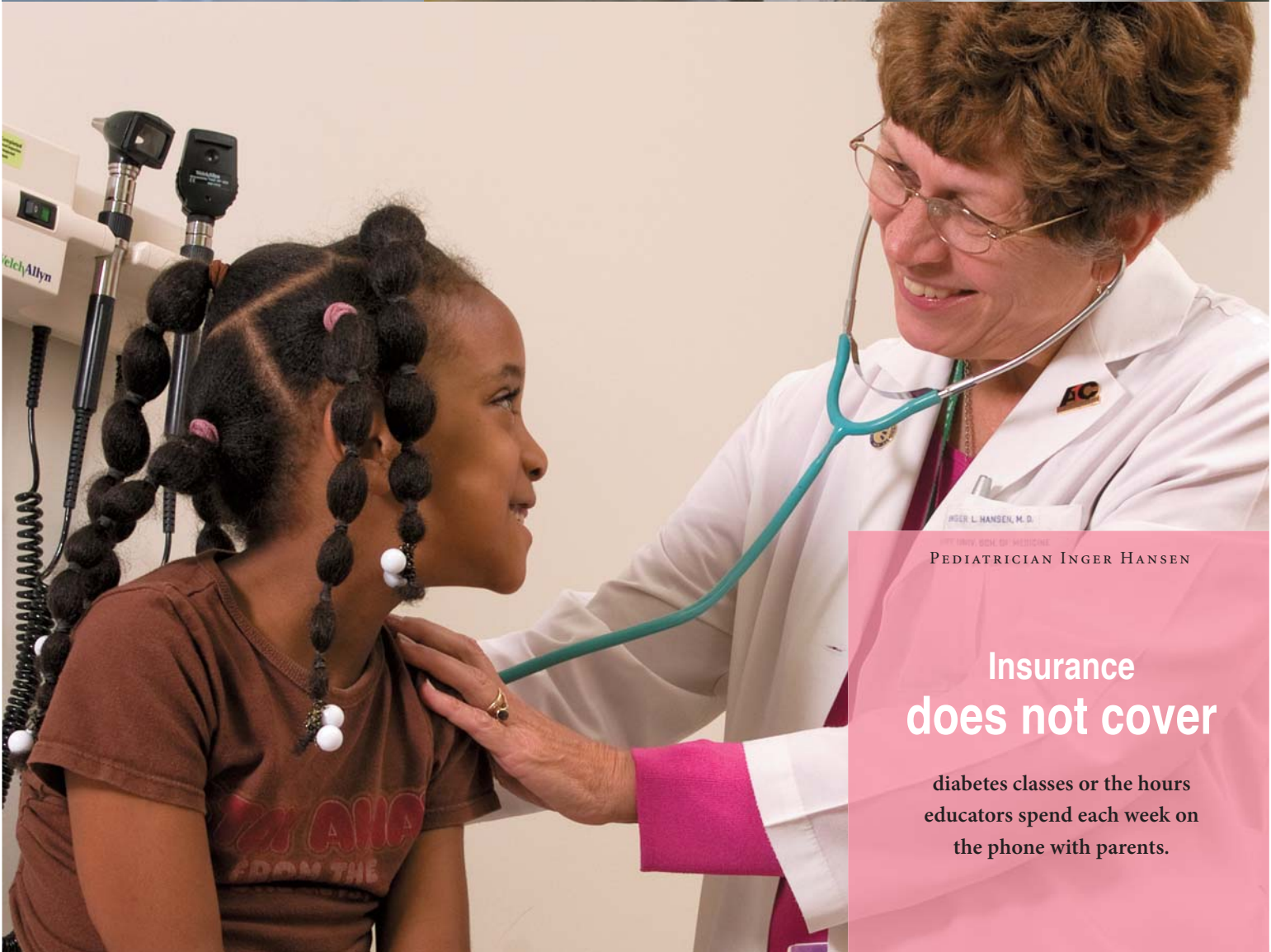
Last year, when the diabetes service that Hansen directs at Emory-Children's Center started a special toddler clinic, doctor visits also became something to look forward to. Trina, now 3, could play under supervision



TRAUMA SURGEON CHRISTOPHER DENTE

The big payoff

for Dente and the team was the sight of a healthy, happy patient, now a frequent volunteer at Grady.



PEDIATRICIAN INGER HANSEN

Insurance does not cover

diabetes classes or the hours educators spend each week on the phone with parents.



In a partnership

that reaches back more than 60 years, Emory medical faculty provide virtually all physician care for more than 60,000 veterans seen every year at the Atlanta VA Medical Center.

with other children her age while her mother participated in educational and support programs with other parents.

Clinicians at the center were surprised then when Trina failed to show up for clinic and her mother stopped calling nurse practitioner Megan Consedine for advice. After the second missed clinic visit, Consedine called the family.

The mother was embarrassed. Trina's father had abandoned the family, lived out of state, and did not know or support the child, she said, but when Medicaid discovered that the father had insurance, they removed Trina from their rolls. Trina's mother had been able to pay for some insulin out of her own pocket but . . . well, not as much as before.

Consedine tried to keep the alarm out of her voice as she asked Trina's mother to please bring her daughter in right away. She assured her that Emory would supply all the insulin for Trina until the mom could clear up the confusion.

Diabetes is an expensive disease for patients, with insulin alone often costing \$160 per month and lancets, strips, and other

paraphernalia another \$200 to \$300. Diabetes is expensive also for Emory Healthcare. Although insurance (when patients have it) provides limited reimbursement for physician visits, it does not cover diabetes classes or the hours educators spend each week on the phone with parents. Yet such support is vital to managing diabetes in children, which is why Hansen insists on it for the 1,500 to 1,800 kids seen each year in her clinic.

Returning (all the way) home

Ben Johnson* first came to the Atlanta VA Medical Center (VAMC) for help with pain that persisted three years after his humvee had hit an improvised explosive device and burst into flames, searing into his memory the sight and sounds of his best friend being killed. It was not the first death that Johnson had witnessed during two deployments in Iraq.

With more than 1,000 Georgia veterans referred for treatment to the Atlanta VAMC trauma recovery program every year, Emory physicians who practice there have seen virtually every kind of reaction to wartime

trauma: veterans who patrol the perimeter of the house, drive in the center of the road, wear combat boots to bed, or keep a gun under the pillow—all symptoms reflecting a type of constant vigilance appropriate to wartime and hard to turn off after a return to civilian life.

In a partnership that reaches back more than 60 years, Emory medical faculty provide virtually all physician care for more than 60,000 veterans seen every year at the Atlanta VAMC, the largest, most complex tertiary care VA facility in the Southeast. Emory scientists also have made the Atlanta VA one of the nation's top VA centers for research, in areas ranging from infectious disease to dementia and traumatic brain injury.

Clinical psychologist Bekh Bradley and psychiatrist Kelly Skelton led the team that began working with Johnson. Suicidal, often irrationally angry toward his wife and children, he agreed with the clinicians that he suffered from post-traumatic stress disorder. But initially, he didn't want to engage in treatment that would address his traumatic memories.

The treatment team agreed instead to focus initially on psychosocial skills that would allow him to better manage his distress. When that was successful, he agreed to a treatment known as "in-vivo" exposure, in which veterans take progressive steps to engage in activities that they have been avoiding. Johnson now can spend time in a crowded mall without undue anxiety. He no longer avoids traffic. He goes grocery shopping during normal hours instead of at midnight.

Following this approach, he felt as if he might be ready to begin working with his therapist on a detailed description of his traumatic combat experiences to gain perspective and learn to regard these memories as memories and not as actual events recurring again and again.

As Johnson relearns how to live outside a



Emory clinical psychologist Bekh Bradley co-leads a team that helps more than 1,000 Georgia veterans each year deal with reactions to battlefield trauma after they return to civilian life.

war zone, many of his anger problems have subsided, and he no longer contemplates taking his own life. His ongoing care includes psychiatric medications and working with a

unit at the VAMC to address problems associated with a mild traumatic brain injury that occurred while he was in Iraq. "It's not a fast cure," says Bradley, "but we have a responsibility to help bring our veterans truly back home again." ☒

WEB CONNECTION In 2009, Emory's charitable contributions included hard dollars and community service. Faculty and staff partnered with others at home and around the globe to make real improvements to lives such as developing vaccines in India and staffing clinics in the Bahamas. To read more stories of the WHSC's impact, see the center's 2009 annual community benefits report, Meeting the Need, at whsc.emory.edu/r_meetingneed.html.

By the numbers

In looking at the bottom line, the Woodruff Health Sciences Center (WHSC) had operating expenses of \$2.5 billion in fiscal year 2008-2009, resulting in an economic impact of \$5.7 billion on metro Atlanta. That impact includes the more than 17,600 people employed by the center, making Emory the largest employer in DeKalb County and the third largest private employer in metro Atlanta.

Adding to that impact, external research funding at the WHSC topped \$446.5 million in the last fiscal year—an 18% increase over the previous year. Every \$1 million in research income results in an average return of \$2 million in revenue for the area and 32 jobs. In other words, research funding received by WHSC over the past year is estimated to generate more than \$890 million in economic impact and more than 14,000 jobs for Georgia.

Additionally, the WHSC has helped Emory bring more than \$775 million into the state in licensing revenues since the early 1990s from drugs, diagnostics, devices, and consumer products. A robust product pipeline includes more than 50 products in all stages of development or regulatory approval, with 27 having reached the marketplace and 12 more in human clinical trials.

The impact keeps mounting when the numbers for charity care are considered. In 2008-2009, Emory Healthcare physicians provided \$48.9 million in charity care, a total that does not include unreimbursed care of \$23.1 million provided by Emory physicians practicing at Grady Memorial Hospital.



Down, but not out

By KAY TORRANCE

The police found her along the roadside in September, beaten to a pulp. Later, at Grady Memorial Hospital in downtown Atlanta, nurses saw bite marks on her body and the imprint of hands around her neck. It was impossible to tell what this once vibrant, 26-year-old had looked like. Both of her eyes were swollen shut, and bones in her face were fractured. A 30-year veteran nurse at Grady called it the worst case of abuse he had ever seen.

After the woman was patched up and fitted with a neck brace, she was to be discharged. But a counselor heard that she had no other place to go but back to the man who had tried to kill her. That's when the Grady Nia Project got involved. Nia team members connected the woman with psychiatric services at the hospital, a domestic violence shelter in the community, and empowerment groups provided by Nia.

Established by Emory psychologist Nadine Kaslow in the early 1990s, Nia is a counseling program for abused and suicidal African American women, which is funded by grants from the CDC and the National Institute of Mental Health. Named for the Kwanzaa term that means "purpose," Nia serves countless numbers of abused women who come through Grady's emergency department each year. The women,

who either feel suicidal or have attempted suicide because of stress associated with violence, come in with black eyes, broken bones, and broken spirits, often inflicted by the people who are supposed to love them the most: their husbands, boyfriends, and partners. These victims of intimate partner violence are usually black, minimally employed, with children, and addicted to drugs and alcohol. Many are homeless.

The Nia Project helps women who are trying to break free from intimate partner abuse. If you or someone you know needs help, contact 404-616-2897 or see whsc.emory.edu/r_nia.html.

Early in her career, Kaslow ran head on into the overwhelming challenges these women face when she treated a female patient who later killed herself. This tragic experience led her to want to help traumatized women, to pull them out of the hopelessness that had made them consider ending their lives. At Grady, when she counseled women who had attempted suicide, she found that many of them were involved in an abusive relationship. She also discovered that low-income, African American women faced more than their fair share of hardships, including racism and oppression, and were at increased risk of suicidal behavior.

In fact, studies have shown that abused African American women attempt suicide at more than double the rate of women of other races. Moreover, if they leave a relationship, their communities often discriminate against them.

Kaslow wanted to do something to change these scenarios, but she knew that any program would need to be grounded in the women's culture and extend beyond one-on-one counseling to work. The program she developed is based on an empowerment group therapy model. The group becomes the women's support system—a key to success for women attempting to leave abusive relationships, Kaslow says, because a woman's family and friends often give up on her after repeated attempts to leave have failed.

"Community" is especially important to African American women, Kaslow says. Historically, they have relied on each other. And because of distrust of the police and the courts, abused black women are less likely than their white peers to seek help from such institutions.

"Many of them are afraid to leave," Kaslow says. "They are making tough choices—getting out versus living on the street."

Nia staff are on-call 24/7, often making a trip to the emergency department in the middle of the night when a woman comes in with injuries or a story consistent with intimate partner violence or when she has attempted suicide. If a woman enrolls in the program,



Emory's Nadine Kaslow found that many women who had attempted suicide were in abusive relationships. She decided to do something about that by founding Nia.

she will join approximately 50 to 75 other women who are going through it at any given time. (A separate group meets for women who have attempted suicide.)

The Nia leaders handle a whole host of issues. They discuss how to secure resources from community agencies. They pick up women who have been evicted, help them find shelter (some shelters for abused women won't admit the women's adolescent sons), get their utilities turned on, and help them enroll in addiction treatment or work readiness programs.

One essential topic the group sessions cover is developing a safety plan. The plan starts with moving an argument out of the kitchen, if it begins there, and de-escalating physical, sexual, or psychological abuse. Women are advised to keep relevant papers outside of the home for easier access and a stash of money or MARTA tokens in case they need to leave quickly. Once a decision is made to leave, a woman often has very little time to gather her things and flee to safety (sometimes with her children). The Nia groups help women think through a plan before they need it: who they can turn to for support, how they can find safety.

One of the earliest women to go through Nia was functionally illiterate, Kaslow remembers. "We helped her get into an adult literacy program. She was so thrilled when she completed it. She came into the office and read every word of the certificate to us. She said she could now go to the grocery store and pick out the can of soup she wanted. Before, she just picked one, not knowing what it was."

Nia is different from other programs for abused women in that it never terminates a woman from the program. Some programs kick out women if they go back to their abusers or have a drug or alcohol problem. "Doing that can often guarantee a woman will go back to the abuser," says Kaslow. "The average number of times it takes a woman to leave her abuser is 10. It's a very slow process, and that's one of the things I've learned to accept more over time."

On a more positive note, the women who participate in Nia have made some progress over time. They feel more positive about themselves and better able to cope with stress. They feel less depressed, anxious, and suicidal. Some remain in the program for years, and others stop by when they need extra support and guidance. ☐

Mastering meditation

Geshe Lobsang Tenzin Negi sits cross-legged before the ornate altar. Its colors, a collage of golden Buddhas, vibrant tapes-tries, and sparkling adornments, float hap-pily at his back. Negi is teaching a group of students to meditate, some for the very first time.

Spiritual director of Atlanta’s Drepung Loseling Monastery, Negi makes meditat-ing look easy, but it’s not. Mastering medi-tation takes dedication and time. Yet duti-ful beginners can quickly grasp its value and meaning.

A senior lecturer in Emory’s reli-gion department, Negi and colleagues study the physical and mental ben-efits of meditation. They’ve enlisted students, staff, and even patients to learn more about the effects of dif-ferent types of meditation.

“Meditation is not just about sit-ting quietly,” says Negi. “It is a process of familiarizing, cultivating, or enhancing cer-tain skills, and you can think of attentive-ness and compassion as skills.”

The Emory-Tibet Partnership forged an innovative study in 2005 to examine the impact of compassion meditation in treat-ing depression among undergraduates. Founded in 1998, the partnership brings together Western and Tibetan Buddhist intellectual traditions for mutual enrich-ment and discovery of new knowledge.

“Bringing this knowledge together is going to be tremendously helpful to humanity and personal well-being and health,” says Negi. —Robin Tricoles

Calm mind, healthy body

There’s an emerging story about your immune system, and it goes like this.

Let’s say you get a splinter in your fin-ger, and it has a bunch of bacteria on it. Your immune cells, called macrophages, begin to secrete chemicals called cytokines. Cytokines, along with other chemicals, flood the area with the aim of destroying the bac-teria and stopping their spread. But cytok-ines also damage surrounding tissue, caus-ing inflammation. Inflammation can wreck havoc throughout the body.

And here’s the moral of this story: researchers now know that stress, not just illness, activates cytokine molecules and thus inflammation.

Yet data show that people who practice meditation may reduce their inflam-matory and behavioral responses to stress, which are linked to serious ill-nesses, including cancer and heart disease.

One type of medita-tion, called focused medita-tion, aims to refine and enhance attention and calm the mind by focusing on one thing such as breathing. Compassion meditation, as its name suggests, is designed to cultivate compassion—that is, enhancing one’s ability to empathize with the anguish, distress, and suffering of others.

Secular compassion meditation is based on a thousand-year-old Tibetan Buddhist mind-training practice called “lojong.” Lojong uses a cognitive, analytic approach to challenge a person’s unexamined thoughts and emotions toward other people, with the long-term goal of developing altruistic emo-tions and behavior toward all people.

While focused meditation has garnered a fair amount of attention from researchers, less is known about compassion medita-tion and its effects on the mind and body, says Geshe Lobsang Tenzin Negi, who has designed a meditation program for ongoing studies at Emory on inflammation and medi-tation. (See *sidebar at left*.) Charles Raison, clinical director of the Emory Mind-Body Program, is leading those studies.

“Our findings suggest that meditation practices designed to foster compassion may impact physiological pathways that are mod-ulated by stress and relevant to disease,” says Raison. With Emory colleagues, he is studying how stress and the immune system interact to make people depressed when they’re sick and sick when they’re depressed.

“Anything that affects the normal func-tioning and integrity of the body tends to activate a part of the immune system that’s called inflammation,” says Raison. “It includes processes that the immune system uses to deal with virus or bacteria, or any-thing foreign and dangerous.”

Based on promising early findings from Raison’s ongoing study, Emory has devel-oped compassion meditation classes for patients and caregivers at the Winship Cancer Institute who might benefit. Raison and Negi also are collaborating with the Emory Predictive Health Institute to study long-term effects of compassion meditation on health and well-being. —Robin Tricoles

WEB CONNECTION | *Compassion meditation classes meet Mondays 10am-11am and Tuesdays 1pm-2pm at the Winship Cancer Institute of Emory University. To RSVP, call 404-778-5933, or for more info, visit cancer.emory.edu/training-education/seminars/education-seminars-training.*

Put me in, coach



Football season came and went, and so did a rush of young patients through Jeff Webb’s office. The Emory sports medicine doctor, who specializes in treating children and teenagers, sees more injuries from football than any other sport, simply

because of the hard-hitting contact of the game.

A former teen athlete him-self, **Webb** (left) played foot-ball, soccer, and baseball on Atlanta’s sports fields, swam competitively, and ran cross country. These days, he treats others for the bumps, bruises, and pains that result from physical activity gone awry.

With so many children and teenagers playing sports today coupled with the advent of off-season leagues, Webb’s schedule is full. The most com-mon injury he treats is overuse.

“Now kids are playing baseball all year around,” he says. “Overuse can cause not only stress fractures and ten-dinitis but also growth plate problems.”

The best cure is one that kids and par-ents don’t like to hear: stop playing tempo-rarily so the injury can heal. Telling profes-sional athletes to do the same is no easier, says Webb.

Before joining the Emory Sports

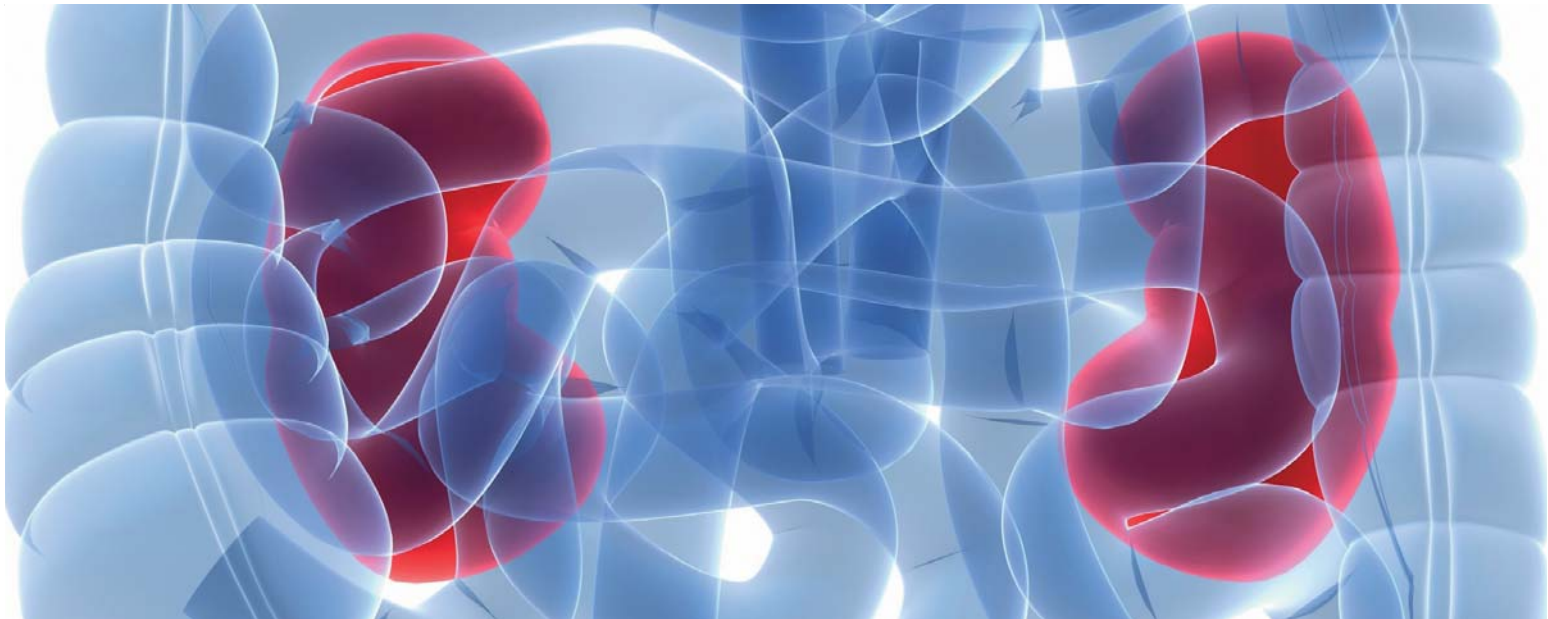
Medicine Center in 2008, Webb com-pleted a fellowship at the American Sports Medicine Institute in Birmingham, Ala., under orthopedic surgeon James Andrews. The institute’s clientele included a host of professional athletes, such as John Smoltz and Reggie Bush. But two of the most important things Webb learned there were Andrews’ golden rules: Don’t be a fan, and put the player before the team.

Webb continues to doctor by that rule, he says, as he and other Emory sports medicine doctors serve a wide variety of teams across Atlanta, including those at Emory, Georgia Tech, and other universities and high schools, as well as performance troupes including the Atlanta Ballet and Cirque de Soleil. Additionally, more than 100 NFL athletes are patients at Emory, and Emory sports medicine doctors work with the national U.S. Soccer, U.S. Ski and Snowboard, and U.S. Track and Field teams, among others. —Kay Torrance

WEB CONNECTION | *For appointments with Jeffrey Webb, call 404-778-7777 or 404-778-3350. For more information, visit [Emory Sports Medicine at emoryhealthcare.org/sports-medicine/](http://EmorySportsMedicine.org/sports-medicine/).*

Health care for Henry County: Emory Healthcare has opened a new primary care facility at Eagles Landing in Stockbridge, Ga., bringing greater convenience and access to family medicine for both adults and children in that area. Emory family practitioner Kennard Hood is providing expertise in a range of areas including adolescent medicine, asthma, diabe-tes, high blood pressure, osteoporosis, sports injuries, and women’s health, among others. The Eagles Landing hours are 8am-5:30pm, Monday and Friday; 10am-7pm, Tuesday and Thursday; and 8am-noon, Wednesday and Saturday. For appointments at Eagles Landing—located at 830 Eagles Landing Parkway, Suite 203, Stockbridge, GA 30281—call 404-778-6886.

Doing dialysis the Emory way



Dialysis is a lifeline for people with renal failure, but it is often exhausting. Patients usually have to undergo dialysis three times a week for up to four hours each visit. With the required investment of so much time, patients want a comfortable dialysis center that can provide excellent care.

Atlanta kidney patients now have a new option for treatment. Emory Healthcare opened three new metro dialysis centers in January. Emory Dialysis Northside, located west of Georgia Tech, offers 38 dialysis stations; Emory Dialysis Greenbriar, within the Greenbriar Mall, has 26 stations; and Emory Dialysis Candler, south of I-20, has 38 stations.

In planning for the centers, an Emory team of doctors and administrators visited dialysis facilities at Wake Forest, which has the largest academic outpatient dialysis program in the nation. The Emory team liked the model they saw there and subsequently contracted with the company that has run Wake Forest's 15 dialysis centers since 1983. That group, Health Systems Management, of Tifton, Ga., is staffing and operating the new centers in Atlanta, with oversight from Emory doctors.

"As an academic medical center, we must set the standard for care," says Emory nephrologist Jeff Sands, who has long advocated for Emory-owned centers. "Our hospital clinical care for patients with chronic kidney failure is outstanding, and we want to provide that same

level of care for patients in outpatient settings."

Emory's dialysis centers also offer learning opportunities for nursing and medical students and residents, as well as clinical research opportunities that can translate to improvements in patient care. For example, one recent finding by Emory researchers is helping dialysis patients sleep better. Patients who receive dialysis in the afternoon often report trouble sleeping that night and the following night. But by cooling dialysis fluid from 37°C to 35°C, researchers have found that patients sleep better. Why? Warmer dialysis fluid interrupts the body's ability to cool its core temperature as the patient falls asleep.

The new centers feature individual stations with reclining chairs, flat-panel television screens, and state-of-the-art equipment. Doctors can remotely access the dialysis computers to check on a patient's vital signs if a nurse discovers a potential problem.

The centers are part of Emory's continuing commitment to the Atlanta community, Sands says. "Owning our dialysis centers gives us a significant advantage to control quality of care, to advance the science of medicine, and to train the next generation of physicians and ancillary staff so that we can more effectively care for our patients with kidney failure." —Kay Torrance

WEB CONNECTION | For more information on treatments for kidney failure, see whsc.emory.edu/r_pancreas_treatment.html. To make an appointment, call Emory HealthConnection at 404-778-7777 or visit emoryhealthcare.org/connecting/healthconnection.html.

Something to smile about

Kevin Hendler works with a few tools in his hands and a few tricks up his sleeve. He's a specialist in geriatric dentistry—one of the few in the country.

Hendler's practice is far from traditional dentistry. "Open your mouth, please" doesn't always work with his patients. Some are medically compromised, taking blood thinners or a pillbox full of medications. Some have Parkinson's or other movement disorders, compromising their ability to keep their mouths still and open. Others have dementia and are unable to understand what the dentist is asking them to do.

That's where the tricks come in. Distraction is one. Hendler can talk a blue streak about nothing in particular, but the babble calms patients, he says. And while they are distracted, he works fast. For those with movement disorders or cognitive impairment, sometimes medication can help them relax. Ideal textbook situations are often lacking, so Hendler develops a modified treatment plan for the task at hand. It keeps the work interesting, he says.

He staffs the Ina T. Allen Dental Center at Emory's Wesley Woods Center. The center handles around 2,500 patient visits a year. Services extend from routine teeth cleanings and fillings to fittings for partial and complete dentures, crowns and bridges, periodontal treatment, and oral surgery. (Hendler also sees inpatients at Wesley Woods Hospital.)

Founded in 1989 by oral surgeon David Allen and his wife Beverly, in memory of his mother Ina Allen, the dental clinic was renovated in 1992 with support from the J.B. Fuqua Foundation. It has four fully equipped, wheelchair-accessible rooms, including one that is accessible by patients

on stretchers. There is also a panorex machine for taking x-rays of the upper and lower jaws and a dark-room.

The official age of eligible patients at the clinic is 55, but Hendler rarely looks at biologic age. Sometimes a 92-year-old can be in better shape than someone 30 years younger. Hendler particularly likes working with this patient population. "They are part of the Great Generation that went from barely having cars to the computer age," he says. "They have great stories to tell."

Beyond dental health, Hendler believes dentistry is essential to maintaining good overall health. If older people can maintain good oral hygiene, they will head off a lot of disease. He points to new studies that link periodontal disease to systemic disease. At Emory, researchers are studying whether the bacteria that cause gum disease also produce substances that amplify the effects of a hormone that ramps up blood pressure.

Hendler is spreading his passion for geriatric dentistry by teaching medical residents, geriatric fellows, and physician assistant students. "Students need to understand the relationship between general health and oral health," he says.

Just recently, Hendler recalls an elderly man with dementia who went from coop-



When Hendler entered the field in 1987, geriatric dentistry was not even a recognized specialty. Although geriatric dental specialists are still rare, today a national organization brings them together. Hendler is a current fellow and past president of the American Society of Geriatric Dentistry and president-elect of the Special Care Dentistry Association.

erative to combative. Although the medical workup revealed no explanation for the change, one care provider decided to send the patient, who wore dentures, to the dental center. Hendler discovered that the man's dentures were cutting into his upper jaw, causing a large ulcer inside his upper lip. Once the dentures were repaired, the patient returned to his calm and docile self.

Tracking down hidden causes and developing tricks that work are signs of success that the Allen Dental Center is working. Another? Hendler holds up all 10 intact fingers. He's only been bitten once, and then, he admits, "It was my own fault." —Rhonda Mullen

WEB CONNECTION | To make an appointment, call 404-728-6432 or visit whsc.emory.edu/r_dentalcare.html.

Opening access to autism data



ANY SCIENTIST SEEKING CLUES TO AUTISM AND OTHER DEVELOPMENTAL DISORDERS WILL SOON HAVE FREE, ON-LINE ACCESS TO A CENTRAL REPOSITORY OF RAW (AND ANONYMOUS) GENETIC DATA FROM MORE THAN 200,000 CASES. The data—to be collected in more than 100 clinical testing laboratories in the United States, Canada, Australia, Asia, and Europe—is being made available, thanks to a \$3.4 million federal stimulus award to Emory.

Called the International Standard Cytogenomic Array Consortium (ISCA), the new database focuses specifically on copy number variations (CNVs), segments of DNA in which a person's two chromosomes differ because of deletions or duplications of individual genes or genetic regions. These CNVs can be inherited or caused by mutations later in life. Some are believed to play a role in disease and disorder. But which?

The goal of Emory medical genetics director **David Ledbetter** (right), principal investigator of the project, is to have results from clinical genetic testing worldwide continually flowing into the new database. He also wants

everyone who wants to use the database to have easy access.

In addition to registered scientists, the raw data in the ISCA database will be available to companies developing microarray technology. This technology uses a high-throughput computer to sift through and analyze large chunks of genomic information chemically arrayed on a microchip or tiny glass slide. In less than a decade, this new technology has taken genetic testing from using a microscope to look for large, visible changes on the chromosome (such as the extra chromosome involved in Down syndrome) to examining a person's entire genome, looking for minute variations in both chromosomes and genes. An aggregate form of data also will be available to clinicians.

The award, from the NIH's Eunice Kennedy Shriver National Institute of Child Health and Human Development, comes from a special category of federal stimulus money (the American Recovery and Reinvestment awards) focused on "grand opportunities"—big ideas that not only pro-

vide jobs but also have a major impact on research and medicine.

When the award category was first announced, Ledbetter leaped at the chance to transform a big idea under way at Emory into an international opportunity. Over the past two years, he and director of the Emory cytogenetics laboratory Christa Lese Martin, co-principal investigator, along with other Emory colleagues, have performed high-resolution microarray technology testing on more than 4,000 patients. They also have received and standardized almost four times that many samples from several of the more than 70 laboratories in the consortium. These data are the first to move into the ISCA central database, and the laboratories working with Emory are first in line to provide data on an ongoing basis.



With the grand opportunities grant in hand, the job now of Ledbetter, Martin, and their collaborators is to expand the number of participating clinical laboratories across the world, standardize data collection, and develop a push-button process with which these laboratories can submit their data.

Ledbetter is excited by ISCA's promise. He's also proud that, instead of individual groups getting a for-profit, subscriber-only monopoly on the microarray analysis of genomic data—as some had tried—that the consortium follows the Human Genome Project model, in which all data are freely and publicly available. —Sylvia Wrobel

Grapes and green tea for good breast health?

The breast is 90% fat tissue, and while some of the hormones produced by the breast's fat cells are harmful, one such hormone acts as a "guardian angel" against breast cancer.

The hormone adiponectin appears to protect against the effects of obesity on metabolism, the heart, and blood vessels. Researchers at the Winship Cancer Institute of Emory University have found that adiponectin also can reduce the ability of cancer cells to migrate from the breast and invade other tissues.

"What kills someone with breast cancer is that the cancer cells learn to get away from the basement container," says hematology researcher Dipali Sharma. "They learn to migrate to the lung, liver, and beyond."

The key to translating this research for patient care lies in finding a way to increase a person's adiponectin, Sharma says. Anti-diabetic drugs known as thiazolidinediones increase adiponectin's activity, but they have toxic side effects. Also getting adiponectin to where it needs to go is a challenge, Sharma says, along with determining what an injection of a high level of adiponectin might trigger.

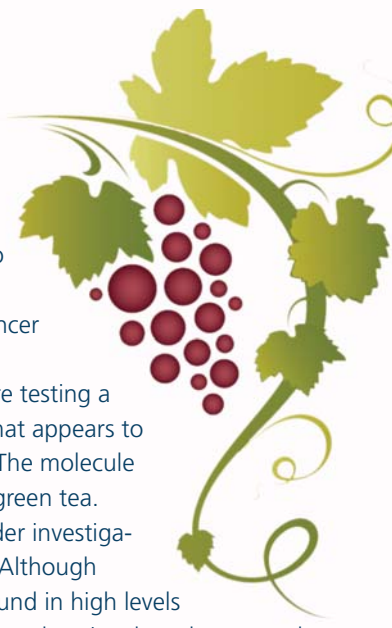
What can increase adiponectin is weight loss. Obese people have lower levels of adiponectin than people of normal weight, and as a

consequence, those with obesity have an increased risk of breast cancer. The Emory researchers also found low levels of adiponectin in patients with aggressive breast cancer tumors.

Currently, Winship scientists are testing a molecule found in certain foods that appears to mimic the effects of adiponectin. The molecule is found in grapes, cabbage, and green tea.

The hormone leptin also is under investigation by breast cancer researchers. Although leptin is a satiety hormone, it is found in high levels in obese people, leading scientists to theorize that obese people may be resistant to the hormone. Studies in mice predisposed to breast cancer show that when leptin is turned off, the cancerous tumors cease to grow.

"We've only scratched the surface," Sharma says. "We might find a gold mine of molecules that may inhibit leptin or enhance adiponectin." —Kay Torrance



Belly up

FOR YEARS, THE PIPE-SMOKING SCIENTIST COMPLAINED OF ABDOMINAL PAIN. EVENTUALLY HE UNDERWENT SURGERY TO REINFORCE THE WALL OF A LARGE ABDOMINAL AORTIC ANEURYSM, THE CAUSE OF HIS DISCOMFORT. Six years later, Albert Einstein died after the aneurysm ruptured.

That was 1955. Today abdominal aortic aneurysms continue to be surgically repaired if found in time. Although many studies explore why aneurysms rupture, few explore why they form in the first place.

Widening and bulging of the aorta, the large artery that runs from the heart into the abdomen, characterize these aneurysms. If the aneurysm ruptures, a person may die from rapid blood loss within minutes. In fact, aneurysms are the 10th leading cause of death in men older than 55. And they are common: 9% of men over 65 harbor one.

Through a bioengineering research partnership, a team of scientists at Emory and

Georgia Tech is now studying why and how abdominal aortic aneurysms form and how they can be prevented. The five-year partnership incorporates the expertise of engineers, biologists, and clinicians from a wide range of clinical and academic areas.

"So far, we've shown that areas of disturbed flow in the abdominal aorta are associated with markers of vascular inflammation. That suggests a link between the local hemodynamics and the development of abdominal aortic aneurysms," says Emory professor of medicine and biomedical engineering Robert Taylor, who is leading the study. In other words, areas of disturbed blood flow in the lining of the aorta may predispose people to aneurysm formation.

However, predicting a rupture is

extremely difficult. For one thing, patients often are unaware of the aneurysm until it has started leaking or has ruptured.

Studies have shown that people in certain demographic groups are relatively protected from the formation of aneurysms. Women before menopause have a lower incidence, as do African Americans. The same is true for diabetics, although their aneurysms are more likely to rupture once formed.

Being able to predict and prevent these aneurysms could one day avert major surgery to repair them. "I tell patients this is one of our big operations," says Taylor. "It's up there with a bypass. Anytime the belly is open for a long time, there's a fair amount of risk. Knowing how and why these aneurysms form could prevent that." —Robin Tricoles



Wagner goes to Washington



WELL, NOT LITERALLY. BUT IN NOVEMBER, EMORY UNIVERSITY PRESIDENT JAMES WAGNER WAS TAPPED BY U.S. PRESIDENT BARACK OBAMA TO SERVE AS VICE CHAIRMAN OF A NEW PRESIDENTIAL COMMISSION FOR THE STUDY OF BIOETHICAL ISSUES. University of Pennsylvania President Amy Gutmann will serve as chair of the commission.

The group will advise President Obama on bioethical issues that emerge from advances in biomedicine, science, and technology. Its goal is to identify and promote policies and practices to ensure that scientific research, health care delivery, and technologic innovation are conducted ethically and responsibly.

“As our nation invests in science and innovation and pursues advances in biomedical research and health care, it’s imperative that we do so in a responsible manner,” President Obama said in a White House announcement. “This new commission will develop its recommendations through practical and policy-related analyses. I am confident that Amy and Jim will use their decades of experience in both ethics and science to guide the new commission in this work.”

Stay tuned for more developments on the new commission.

On the research front

Speeding drug discovery: Many undiscovered drugs that could carry potential significant benefits for cancer patients are of little interest to the pharmaceutical industry. The search

for them is not worth the amount of money it would take to find and then develop them. Enter the National Cancer Institute’s Chemical Biology Consortium (CBC).

Emory is part of that consortium, which is focusing on accelerating the discovery and development of new targeted

therapies for cancer. The consortium will bring together the skills of hundreds of chemical biologists, oncologists, and chemists to molecular oncology. The goal is to bridge the gap between basic science and clinical research supported by the NCI.

Recent advances in understanding the molecular basis of cancer have opened doors for new avenues for innovative drug discovery, says pharmacologist **Haian Fu** (above), director of the Emory CBC. The consortium will enable its members from 11 centers nation-

wide to pursue investigation of new signaling pathways and promising but difficult targets for potential cancer drugs.

What makes the effort particularly promising is its emphasis on team science. At Emory, the team includes investigators from the Winship Cancer Institute and researchers from throughout campus, from biologists and researchers who screen compounds to bioinformatics experts and medicinal chemists. Emory’s effort builds on its participation in the National Molecular Libraries Screening Center Network, which uses high-tech screening methods of large libraries of small molecular compounds (up to 200,000 or more) to identify promising molecular research probes.

For more information on the new center, call 404-712-2654.

Moving in the right direction: Dystonias are a group of rare neurologic diseases that cause muscles to contract involuntarily. They can affect the entire body, resulting in twisting, repetitive movement and distorted posture, or they can hone in on a specific part of the body, such as the neck, eyes, mouth, or hands.

Emory is one of 18 centers in the United States, Canada, and Europe that are part of a dystonia coalition that is seeking to advance clinical research and find better therapies for dystonia. Currently, muscle relaxants, repeated injections of botulinum toxin, and surgery are used to treat the condition, but patients and clinicians alike widely consider these treatments ineffective.

“The misconception that adequate therapies are available for dystonias is impeding the development of better ones,” says Emory neurologist and human geneticist **H.A. Jinnah** (above), who is co-directing the coalition, which is funded by a \$6-million grant from the Office of Rare Diseases and the National Institute of Neurologic Disorders and Stroke.

Specific research projects the coalition will undertake are establishing a repository to store samples from patients, finding diagnostic markers, and developing diagnostic criteria and severity scales for cervical (neck) dystonia and spasmodic dystonia, a voice disorder.



Consequences of a bad night’s sleep

MICAH FISHER WILL ALWAYS REMEMBER THE PATIENT WHO PLANTED THE SEEDS FOR HIS CAREER. The summer before he started medical school, he was working at a Pennsylvania hospital where a woman was admitted with pulmonary hypertension, a condition in which the right side of the heart has trouble pumping blood into the lungs.

“She was afraid. I remember the look on her and her family’s faces,” Fisher says. “She coded and died right in front of me. It was the first time I’d seen that.”

Now medical director of Emory University Hospital’s Medical Intensive Care Unit, Fisher organizes Emory’s participation in clinical trials testing new treatments for pulmonary hypertension.

Pulmonary hypertension has many causes, including chronic obstructive pulmonary disease and congenital heart defects. It can occur as the result of another disease that burdens the circulatory system, such as kidney problems associated with autoimmunity or sickle cell anemia. Or its cause can originate in obstructive sleep apnea (periodic interruptions in breathing throughout the night).

Its symptoms—swelling of the legs, dizziness, and difficulty in breathing or walking—can be attributable to a variety of conditions, Fisher says. An accurate diagnosis usually involves an electrocardiogram or invasive imaging of the heart such as catheterization.

Although several types of medications are available to treat pulmonary hypertension, many of these have drawbacks, according to Fisher. Some, for example, require the implantation of a pump for intravenous administration of drugs, and others need careful monitoring because of their potential to damage the liver.

Among other research, Fisher is overseeing a trial in which the drug sildenafil, sold commercially as Viagra, is used with a liver-sensitive drug to allow medication dosage for patients with pulmonary hypertension to be reduced. Sildenafil (known to relax blood vessels) was originally discovered by scientists working on blood pressure regulation.

“Even though some of these drugs work pretty well, there is still



a significant need for better options because of the mortality surrounding pulmonary hypertension,” says Emory pulmonologist Mike Hart, who serves as acting associate chief of staff for research at the Atlanta VA Medical Center.

Hart’s laboratory has found that depriving mice of oxygen (either chronically or in cycles that resemble the periodic gasping of sleep apnea) leads to pulmonary hypertension. The work—published in the May 1, 2009 issue of the *American Journal of Respiratory Cell and Molecular Biology*—builds on research showing that

pulmonary hypertension develops because blood vessels in the lungs thicken and present the heart with too much resistance.

In the Emory study, the cells surrounding blood vessels in the lungs produced more of an enzyme called NADPH oxidase in response to low oxygen levels. Some forms of NADPH oxidase are helpful, even essential, because they are responsible for making superoxide. Superoxide is a reactive free radical that the immune system uses to kill bacteria. But increased superoxide also interferes

with signals that allow blood vessels to relax and can lead to thickening of blood vessels.

Hart’s team also has shown that a class of drugs already used to treat diabetes can push back against increases in NADPH oxidase and superoxide. Treating mice with this class of drugs, called thiazolidinediones, prevents exposure to low oxygen from triggering pulmonary hypertension. It may even be able to reverse the process.

Thiazolidinediones, however, have their own history of harmful side effects, so Hart is not celebrating yet.

Still, the finding is useful, he says, because it provides insight into how the molecules involved in regulating blood vessel function are regulated and will help scientists hone in on the specific effects of this class of drugs.

Thanks to this research, there may be several more options available in the coming years to effectively treat patients like the woman Micah Fisher remembers so well. —Quinn Eastman

Hart’s laboratory has found that depriving mice of oxygen (either chronically or in cycles that resemble the periodic gasping of sleep apnea) leads to pulmonary hypertension.

True north

Emory Healthcare President & CEO John Fox shares his strategy for steering the course through two storms—the Great Recession and health care reform.

John Fox leads Emory Healthcare, the largest and most comprehensive health system in Georgia. EHC employs more than 10,000 people and encompasses Emory University Hospital, EUH Midtown, Wesley Woods Center (which includes a hospital for geriatric and chronic care), Emory University Orthopaedics & Spine Hospital, The Emory Clinic, the Emory-Children's Center, and joint ventures (Emory-Adventist Hospital, Emory Johns Creek, and Emory Eastside).



Each year on September 1, a new fiscal year begins at Emory Healthcare, and last year was no exception. Our plans were in place to provide the infrastructure and resources to serve the thousands of patients we see each year and support our 10,000 employees as well.

But September 1, 2008, brought unprecedented challenges to our system and to others across the nation. As financial markets began to implode in September and October, 2008, we found ourselves with operational plans for an economy that no longer existed. An immediate effect was a drop in the financial assets of Emory Healthcare (EHC) and in our investment portfolios. In the

background, a bigger issue was looming—unemployment. When the economy tanked and banks began to fail, residential construction stopped. Layoffs followed not just in construction but also in retail, manufacturing, and other sectors. Georgia's unemployment went from below 4.3% to now around 10.5%.

The calamitous drop in jobs had a dramatic impact not only on our patients

and their families but also on our employees and their families. In Georgia, we saw more than 500,000 people added to the ranks of the uninsured. And of those who still had jobs, many were seeing their insurance benefits downgraded from a PPO to an HMO or to plans with impossibly high deductibles.

In light of this new economic reality, EHC was facing a projected budget shortfall of \$50 million in FY 2009. That is a lot of money in anyone's bank account and certainly an amount that would damage EHC's goal to provide the best health care for patients. It costs \$4.5 million a day to run EHC, and a disruption of our cash flow threatens liquidity and our ability to meet our mission. To soften those dire predictions, we had to work quickly to create and implement a new plan of operation.

The day after Thanksgiving 2008, the EHC leadership group met to discuss a strategy. How could we preserve our first mission of quality patient care, given substantially less revenue coming into the system? How could we preserve as many jobs as possible? We started with some ideas to reduce costs—controlling our hiring for nonessential positions, potential changes to fringe benefits, and rebidding contracts, for starters. We knew we wanted to keep any cuts as far from patient care as possible. The executive team agreed to accept no pay increases in FY09, and we cancelled incentive plans for the leadership to align ourselves with the same realities of our employees.

I then took the challenges EHC was facing and our ideas to all of our employees. After presenting the situation directly to more than 300 employees and soliciting ideas from all 10,000, I was astounded by the response. Our employees from nurses

to lab techs and maintenance workers, had hundreds of ideas for how to cut costs and save money. I learned things I never knew about our operation, down to the cost of plants in every planter in every hospital. Nurses suggested going to wireless computing, enabling us to disconnect many of our telephone landlines. Employees were willing to cash out their vacation time in new ways that saved more money.

The implementation of these hundreds of ideas had an impact that I would never have predicted when all of this started. Our employees essentially salvaged our year, and EHC ended FY09 in the black,

Our employees, from nurses to lab techs and maintenance workers, had hundreds of ideas for how to cut costs and save money.

\$4 million ahead of budget. We plowed that surplus back into investments in infrastructure to upgrade our IT system, to purchase necessary equipment to keep our enterprise sound.

It was the culmination and implementation of these ideas that saved hundreds of jobs and allowed us to forgo any salary reductions for employees. Unlike other hospital systems in Atlanta and the nation, we were able to maintain our workforce. Only in preparing for FY10 did EHC have to reduce any jobs, which we were able to accomplish largely by attrition. In the end, only 22 people experienced layoffs, and I am happy that more than half of those have found work, some back in different positions in EHC. My goal is to work with all of the rest of these valued employees to find jobs for them too.

Also, unlike other health systems and other businesses in America, we have continued to grow during the recession. EHC is handling more patients each year,

and although many more of those patients are uninsured, this increase in volume is allowing us to continue to be solvent. One of our newest hospitals, Emory University Orthopaedics & Spine Hospital, is doing quite well with its emphasis on patient- and family-centered care. We expect The Emory Clinic to grow by 10% this year. We also will have the advantage of implementing a full year of employee ideas for FY10, doubling the number of months of implementation in FY09.

Another silver lining of our new approach is the elimination of the use of agency nurses in EHC, something we have been trying to do for years. It makes sense to have our nurses with us, full-time, for the long term. As staff nurses, they learn our systems and our computers, and that translates into efficiency and better patient care.

In these challenging economic times, EHC has to remain fiscally healthy to keep its patients healthy. We have to protect the organization so we can protect our ability to provide health care.

We are now caught between two storms. The Great Recession seems to be leveling off, although unemployment most likely will remain high for some time to come. The second storm on the horizon is health care reform, which will have as yet unknown impacts on the health care industry for at least a decade to come.

During the first storm, EHC proved to be an organization that could flex and adapt to change. We will hold to the path as health care reform brings more challenges and changes. No matter, we have leadership and employees to hold the course to fulfill our mission. Patients have always been and remain our true north. —John Fox

Emory Health is proud to announce the formation of its first editorial advisory board and to thank our distinguished members for their service.

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Hammett is one of the 14 registered nurses who answer 16 phone lines at Emory Healthcare's HealthConnection. A one-stop shop for patients and referring physicians, HealthConnection is available 7a.m. to 7p.m. each weekday. What would you like to know?

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