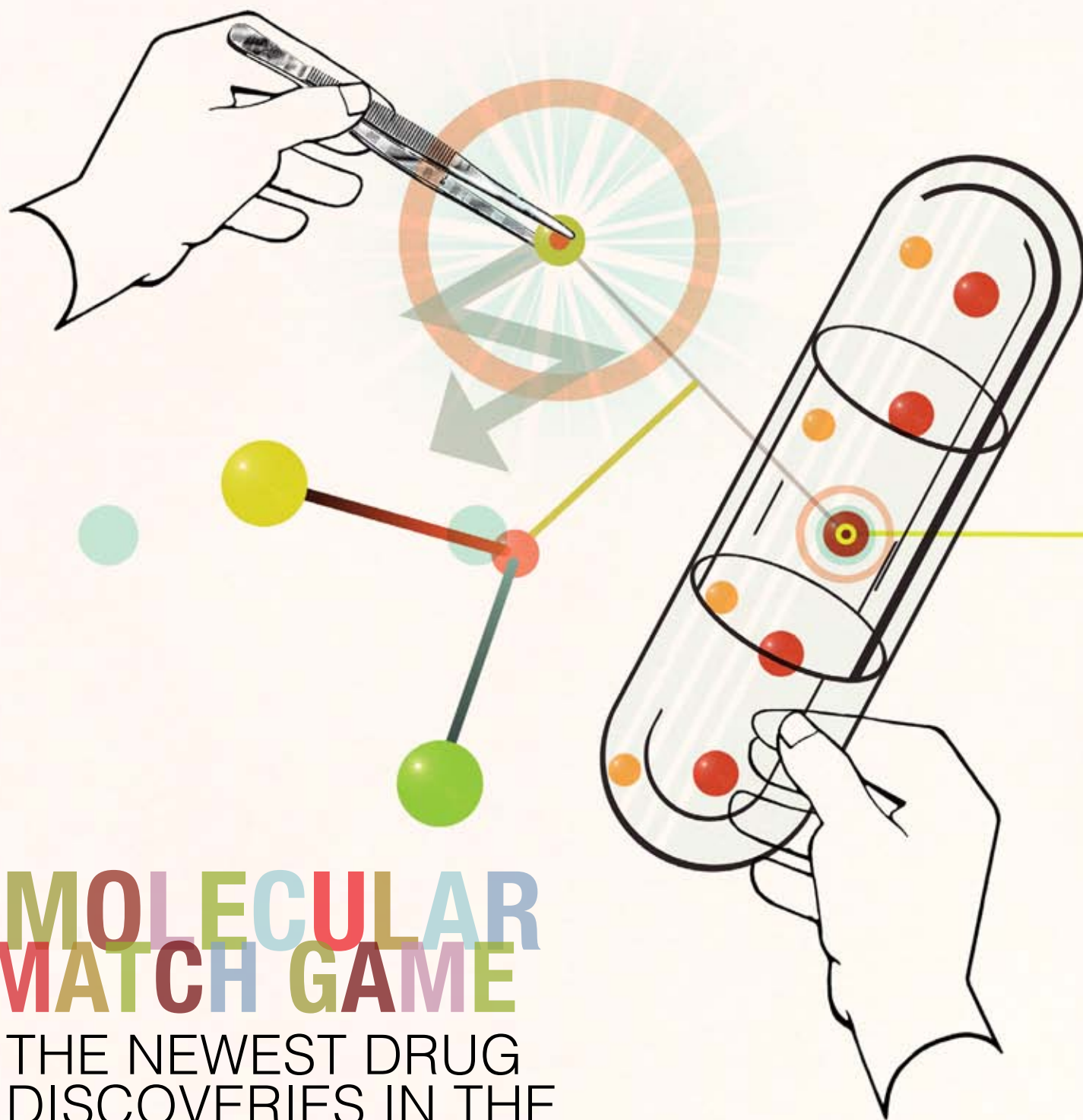


EMORY | health

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



MOLECULAR MATCH GAME

THE NEWEST DRUG
DISCOVERIES IN THE
EMORY PIPELINE

FROM THE EXECUTIVE VP



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In an age of health care reform in which uncertainties abound, one thing, we believe, is certain—this new partnership is good news to patients in North Georgia.

Together, we can

This spring, Emory Healthcare and Saint Joseph's Hospital made the exciting announcement that we are joining forces. Why is this new partnership important? It brings together two Atlanta health care institutions—one a nationally ranked, academic medical center and one a community hospital with deep historical roots—to create a fiscally sound and strong clinical enterprise.

In an age of health care reform in which uncertainties abound, one thing, we believe, is certain—this new partnership is good news to patients in North Georgia. It keeps the excellent physicians and staffs of both of our systems available to them and expands our clinical services. It also aligns Emory's vast research enterprise and clinical trials with those of Saint Joseph's research institutes. Together, we will be stronger, and the health of Georgians will be better for it.

You can read more details about the new joint operating company in this issue of *Emory Health*, along with other contributions that Emory brings to the table—in patient care, education, and research. For one, Emory

scientists are discovering new drugs to treat chronic diseases at home and neglected diseases in the developing world. In fact, a new study in the *New England Journal of Medicine* reports that Emory is the fourth largest contributor in the nation to the discovery of new drugs and vaccines by public-sector research institutions.

We are fortunate in being able to advance health on many frontiers throughout our health center and in collaboration with others at Saint Joseph's and the recently acquired Emory Johns Creek Hospital (previously owned jointly with HCA). Emory is strategically pursuing these alliances and others with one goal in mind—to offer the most advanced and highest-quality health care for Georgia.

We are blessed to have many partners helping us reach that goal, and among them is the American Cancer Society with national headquarters here in Atlanta. In this issue, you'll be able to read an editorial by my friend and Society CEO John Seffrin that highlights the organization's recent efforts to prevent and treat cancers. His advice—to prevent the preventable, treat the treatable, and fix the fixable in our health care system—applies not only to cancer but also to all the ways in which the Woodruff Health Sciences Center can work with its strong institutional partners to bolster health in our communities.

S. Wright Caughman

Please share your feedback at evphafeedback@emory.edu.




EMORY | health

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

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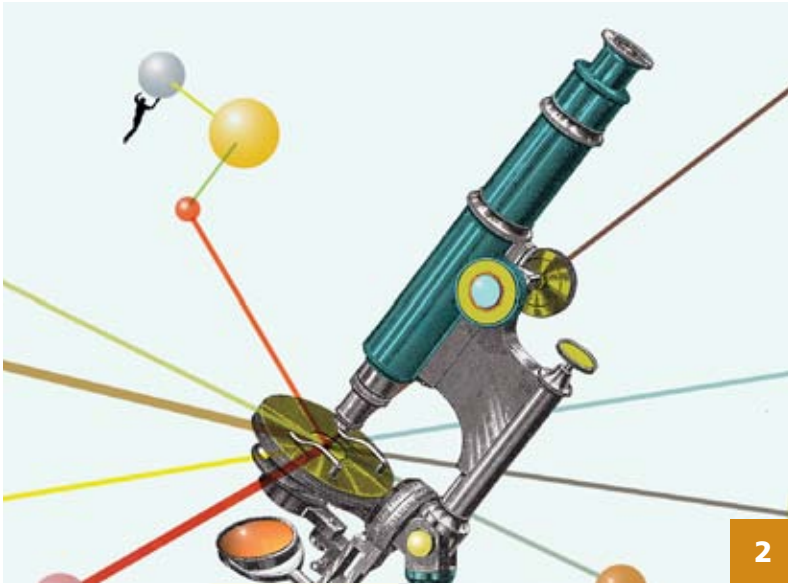
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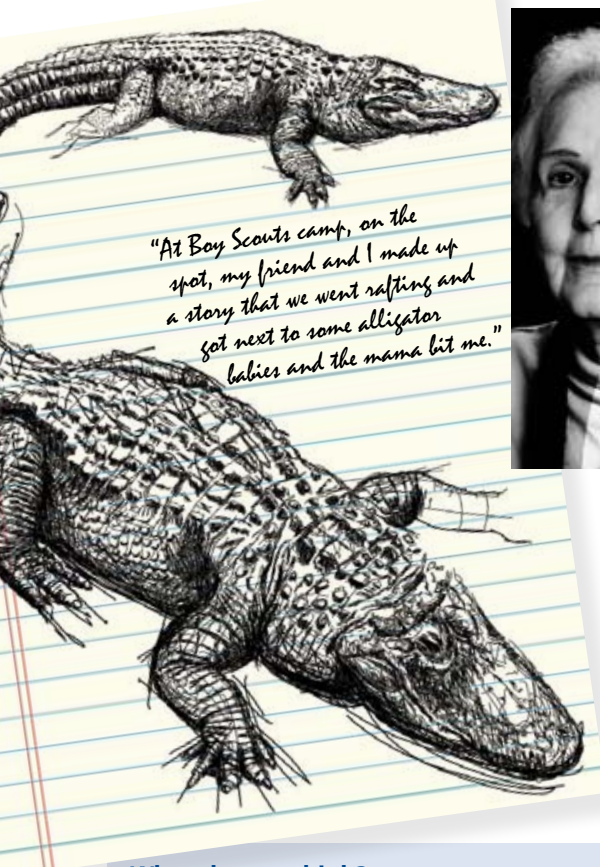
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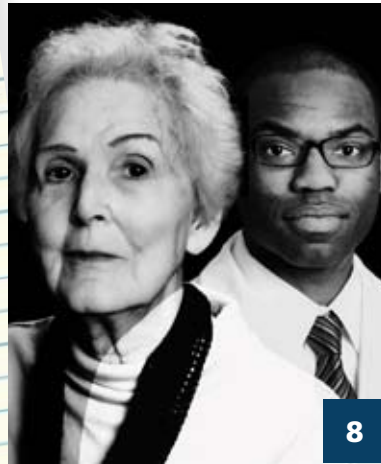
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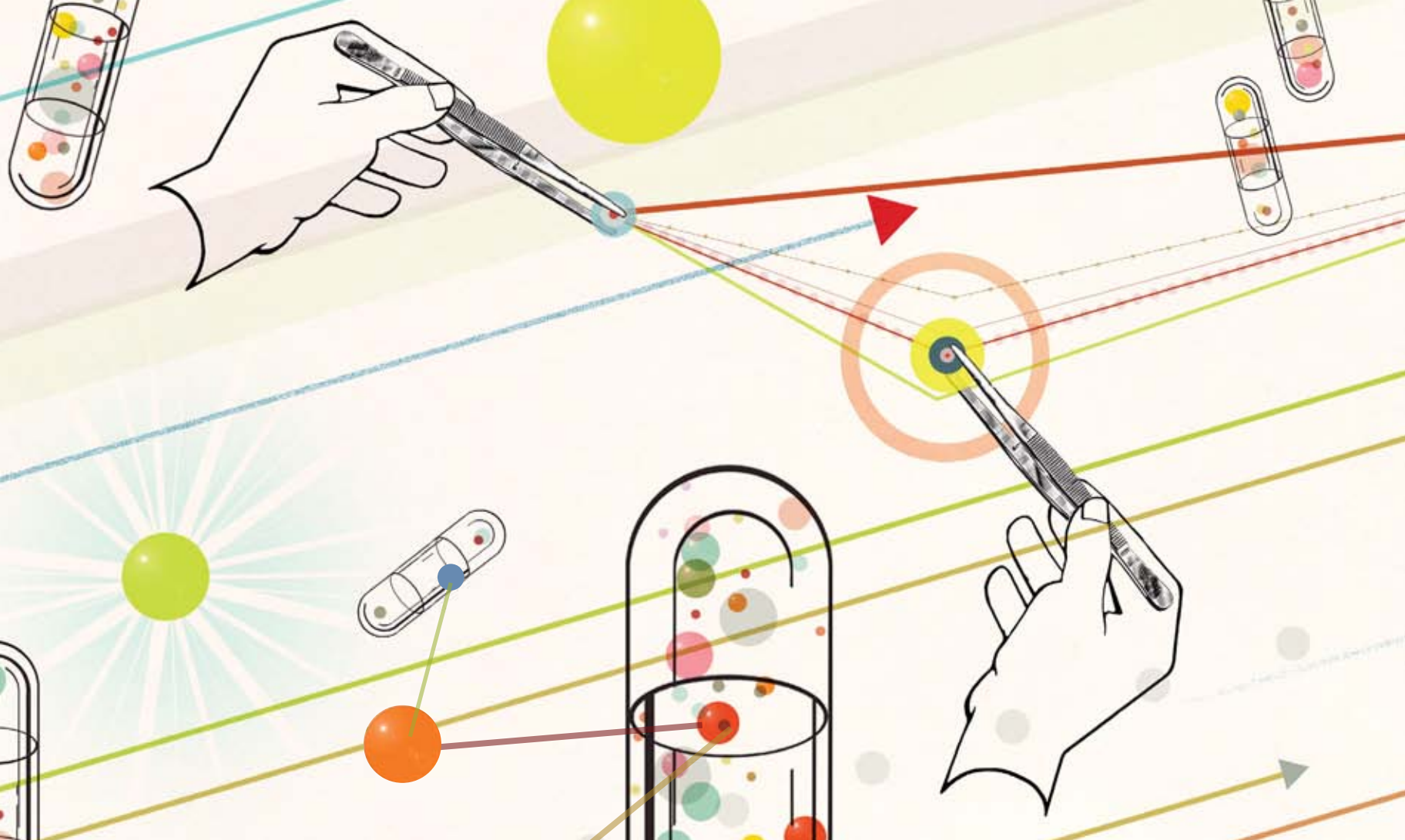


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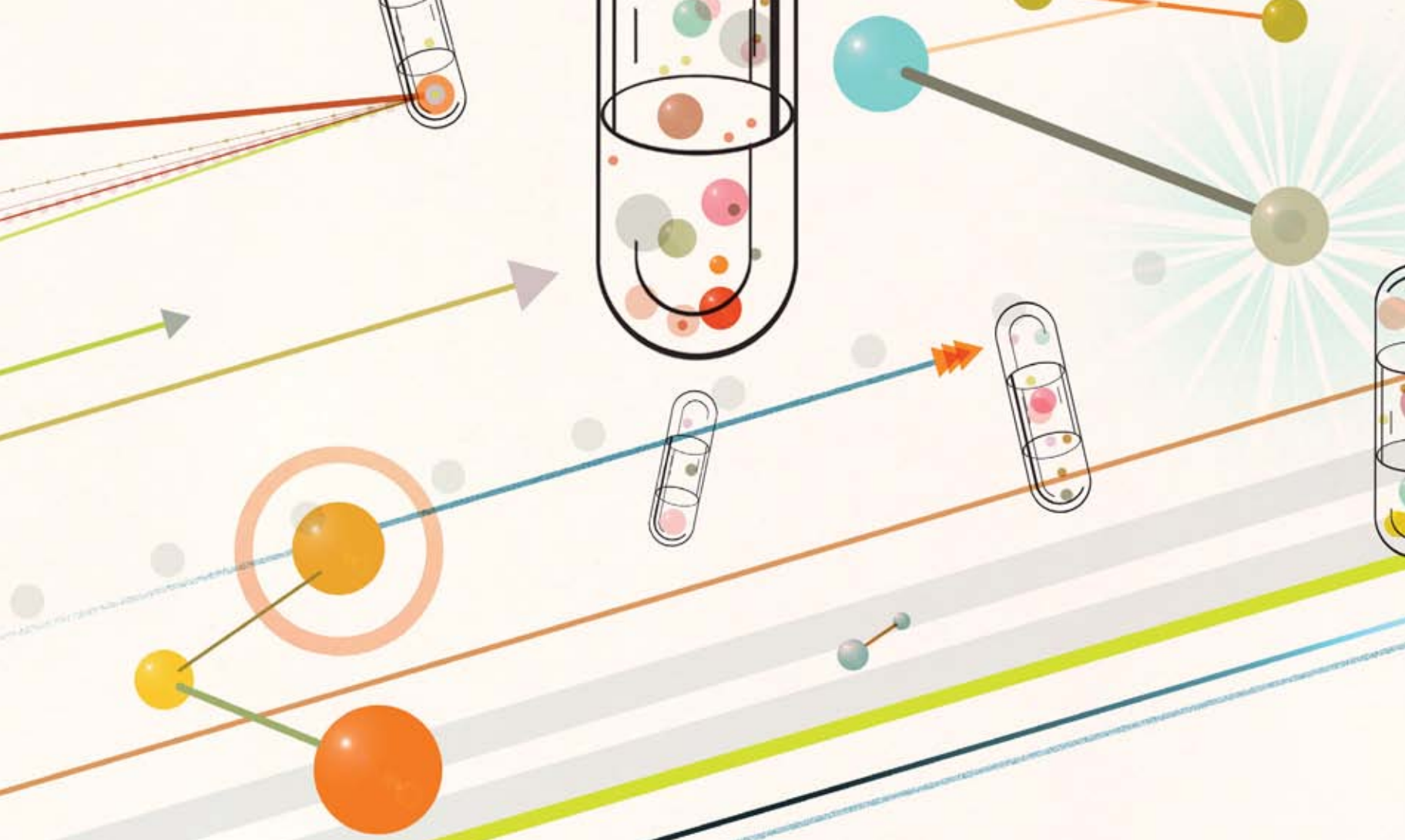
What do you think? *Emory Health* welcomes your comments—pro or con—about topics and issues covered in this magazine. Please send comments, letters to the editor, address changes, and other correspondence to *Emory Health*, 1440 Clifton Road, 150M, Atlanta, GA 30322; email rhonda.mullen@emory.edu; or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



MOLECULAR

IN CREATING NEW DRUGS FOR CHRONIC AND NEGLECTED DISEASES, EMORY CHEMISTS AND CLINICIANS ARE CHANGING THE DRUG DISCOVERY PROCESS—AND POTENTIALLY THE WORLD AS WE KNOW IT.

By MIKE KING • Illustrations by MARK ALLEN MILLER



MATCH GAME

Using available space in a half-dozen buildings around campus—from undergraduate chemistry labs to Yerkes National Primate Research Center—you'd think the Emory Institute for Drug Discovery (EIDD) is having a hard time finding itself.

Not so. The three-year-old institute, one of the first and largest of its kind anywhere, is deeply grounded in a mission to change how science searches for new drugs as well as develop more effective ways of using medications already on the market. In fact, a new study in the *New England Journal of Medicine* finds that Emory is the fourth largest contributor in the nation to the discovery of new

drugs and vaccines by public-sector research institutions.

While laboratory space for the institute may be scattered across campus, the research driving the whole enterprise is focused on one area—small molecule therapeutics. By understanding the three-dimensional structure of proteins and how they interact with each other, scientists can observe and even alter what happens within the basic building blocks of the body's cells.

MOLECULAR MODELING

The process amounts to a sophisticated version of an online molecular dating service using high-throughput computing, 3-D imagery, and old-fashioned trial and error. The goal is to match the molecular structure of the half-million or so compounds entered into the world's chemical directories to the structure of proteins inside

viruses, cancer cells, and other microscopic threats. Only in this case, rather than setting them up for dinner and a movie, the science matchmakers want one to change how the other does its job.

Gathering that kind of knowledge and manipulating what happens at the molecular level opens worlds of therapeutic opportunities, including potential answers for how to make anti-cancer drugs less toxic and how to interrupt the process viruses use to become resistant to anti-viral drugs. Perhaps even more significant, molecular therapeutics could hold the key in the battle against neglected diseases like malaria, tuberculosis, and dengue fever, which loom larger now that the world's population has become more mobile and is moving from rural to urban settings.

Emory chemist Dennis Liotta, who directs the institute, is a co-inventor of drugs routinely used by more than 90% of patients in the United States being treated for HIV/AIDS. As a researcher at Emory since 1976, he's worked with dozens of private drug companies to bring new discoveries to market, so he knows how Big Pharma works.

He's also a successful businessman who has developed several biotechnology companies of his own.

SURVIVING DEATH VALLEY

Liotta describes Emory's work as critical to finding new drugs for neglected diseases that might otherwise succumb in the "valley of death" for developing drugs. That phrase describes the expensive and time-consuming phase when compounds are being tested for their safety and efficacy in laboratory animals—a time well before they reach the clinical testing stage in people.

With the average cost of developing a new drug now closing in on \$1 billion, Liotta says, potential investors and even large pharmaceutical firms are often reluctant to risk money during this phase. Foundations and the government—mostly through the NIH—have until recently also declined to provide research funding during this phase of development. This problem has been particularly acute in neglected global diseases.

What's emerging now is a new model linking global partnerships composed of small biotech labs, non-governmental organizations, foundations, government sponsors, and academic collaboratives like the EIDD. Many of those have agreements with pharmaceutical companies to jointly sponsor research.

TEAMING UP FOR GLOBAL HEALTH

The institute, for example, has a collaborative arrangement with Scynexis, Inc., in Research Triangle Park, N.C., to develop an anti-viral drug for dengue fever, a mosquito-borne illness that infects 50 million people a year and causes 22,000 deaths, mostly among children. The ancient disease recently has made a comeback in places from which it had disappeared for decades. Florida state health officials reported 57 cases in 2009 and 2010, at least one of which was contracted locally.

No anti-viral treatment exists for dengue, which can have serious side effects, even though it usually is not fatal. Instead, health officials have relied on prevention efforts—mosquito nets, repellent, and removal of standing water sources that attract the insect around residences. Developing a drug to treat the illness would be a major breakthrough in global public health.

That's a long way from happening, but this effort probably never would have been attempted under the traditional model for





Emory researchers Dennis Liotta (left) and Ray Schinazi discovered drugs that are used routinely to treat more than 90% of patients in the United States with HIV/AIDS.

drug development, according to Liotta. The Emory-Scynexis relationship is rather simple, he says. “We’ll do the chemistry, and they’ll do the biology.”

Another global threat, tuberculosis, presents an even greater challenge, even though there are drugs to treat it. There are 9 million active cases annually around the world, according to the World Health Organization, and it is implicated in 2 million deaths each year. The primary issue with the effectiveness of TB drugs is patient compliance. To treat the disease effectively, TB patients must take daily medications faithfully for six to nine months. Many patients stop taking their meds after a few weeks, which has the effect of temporarily weakening the bacterium before allowing it to bounce back, stronger and more resistant to the very drugs that once worked against it. This more resistant strain of the bacterium can then be passed on to others, further complicating treatment.

With TB, the goal is to find a compound that inhibits one of the enzymes that provides energy to mycobacteria in a latent (resting) state. With such a discovery, the treatment period for TB could, in

principle, be reduced to two- to three-weeks, in line with that of most other infectious diseases. That scenario, Liotta likes to say, “could change the world.”

generation of scientists in drug discovery, especially among those working in developing countries. Liotta believes that the GSK agreement, and others like it, will allow the knowledge pool to expand and put drug research closer to where it is needed most.

POOLING KNOWLEDGE

Emory signed a memorandum of understanding in 2010 with pharmaceutical giant GlaxoSmithKline (GSK) to become the first university to join GSK’s “intellectual property pool.” The pool targets development of new drugs for TB and other neglected diseases that plague the least developed countries. TB in particular is responsible for the death of many HIV/AIDS patients in poor countries, where the epidemic remains a major killer.

The arrangement with GSK, Liotta says, allows Emory researchers access to more than 600 patents for drugs that could be used to treat neglected diseases. Equally important, it provides EIDD scientists with direct access to their GSK counterparts. The institute is working with GSK in Tres Cantos, Spain, to screen for compounds that readily permeate the rigid clusters of TB mycobacteria, called granulomas, that make it difficult for conventional TB drugs to reach their targets.

But more than research alone, the EIDD has a compound mission—to train a new

WITH THE AVERAGE COST OF DEVELOPING A NEW DRUG CLOSING IN ON \$1 BILLION, POTENTIAL INVESTORS ARE RELUCTANT TO RISK MONEY DURING THE TESTING PHASE.

A NEW WORLD ORDER FOR RESEARCH

The ongoing work at Emory and other public-private collaborative drug discovery centers amounts to “an emerging new world order that holds great promise for global health,” says George Painter, chairman of the board and chief scientific officer for the biotech company Chimerix, Inc.

“The rapid movement between population centers around the world is bringing public health concerns to the forefront,”

Painter says. “It’s difficult for large pharmaceutical firms to move in these global health areas because it is hard to convince near-term investors about the value of doing this type of research.”

By collaborating with centers like Emory, commercial pharmaceu-

tical companies can reduce the risk of losing millions of dollars in research that doesn't produce what investors want—a sure market that makes their initial investment worthwhile.

Painter, an Emory alumnus and scientific adviser for the EIDD, is enthusiastic about how quickly the public and private collaborative process for drug development is spreading. “Universities are the place where innovative research is done,” he says. “It really starts there.”

Closer to home, the EIDD is working on several major research projects aimed at new drugs and better uses of existing compounds in the fight against cancer, heart disease, and other chronic illnesses. It also has ongoing projects targeted at using compounds under development for everything from traumatic brain injury to hot flashes in menopause.

“There are so many ways where we can make a significant impact,” says Liotta, who hopes one day to have the institute’s 30 or so faculty and staff housed in one location. “Our clinicians here are so smart,” he says. “If we can just give them the tools they need, we can accomplish great things.”

WEB CONNECTION To see videos related to drug discovery at Emory for lung cancer, see bit.ly/lungtrial, for fragile X, bit.ly/fragilexdrug, and for cocaine addiction, bit.ly/cocainedrug.

MATCH POINT

Researchers across Emory’s campus are searching for drugs to treat a range of diseases from cancer and flu to infection and stroke.

INFLAMMATION

One of the compounds under development, MSX-122, has shown efficacy in animal testing for inflammation, including that seen in **rheumatoid arthritis** and **inflammatory bowel disease**, among other conditions. Drugs for arthritis are often expensive and can have serious side effects when taken on a prolonged basis. MSX-122 potentially could reduce these side effects and lower the cost of treatment. This work has progressed to the early stage of clinical testing in a small number of patients, to determine its safety. Later trials will test MSX-122’s effectiveness in larger groups of patients.

CANCER

The same compound, MSX-122, also may be used to reduce and possibly eliminate skin damage due to inflammation in cancer patients who are undergoing radiation therapy. Additionally, it holds the potential to be used (perhaps in pill form) by soldiers who are exposed to radiation in combat.

Emory researchers have found that UBS-109—a synthetic analog of curcumin, the major component of the spice turmeric—can be safely administered orally to retard tumor growth in mouse models for **head and neck cancer**.

For two decades, Emory scientists have been working on safe and orally active compounds that inhibit the critical pathways associated with sphingolipid signaling, which is important for the survival, growth, and proliferation of certain types of cancer cells. The EIDD has successfully identified numerous compounds aimed at altering these sphingolipid signaling pathways in ways that might be useful for the treatment of **prostate and brain cancers**.

With a \$1.5 million grant from the National Cancer Institute, scientists at Emory’s Chemical Biology Discovery Center are studying genomic alterations in **glioblastomas**, the most deadly of adult brain tumors. To find a target for a new can-



cer drug, scientists first must find the proteins that are made by altered genes and study the interactions between those proteins within their network in a tumor. Drugs can disrupt those networks and inhibit or promote the activity of a particular target protein. To search for effective drug therapies against glioblastoma, Emory scientists will use high-throughput technologies—robotics equipment that automatically handles thousands of liquids and chemical assays in minute quantities and then computes and analyzes the resulting massive amounts of information to screen compounds against protein targets.

FRAGILE X

Emory researchers are testing what may be the first drug therapy intended to address the complex learning and behavior problems associated with fragile X syndrome.

Fragile X syndrome is caused by a genetic mutation that inhibits the production of the protein FMRP, which regulates the amount of other proteins produced in the brain. The absence of FMRP leads the glutamate receptor mGluR5 to trigger the overproduction of synaptic proteins, resulting in the learning and behavior problems characteristic of fragile X. The drug being tested for safety and efficacy in phase 2 clinical trials is an mGluR5 antagonist, which essentially puts a brake on the mGluR5 activity.

The gene for fragile X was discovered in 1991 by Emory human genetics chair Stephen Warren. He led an international team that discovered the mutated gene on the X chromosome and that later developed a screening test.

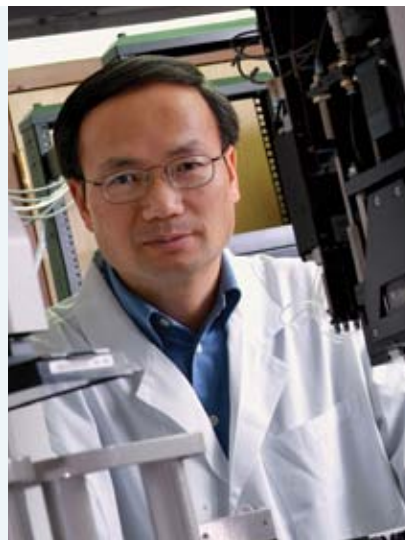
INFECTIOUS DISEASES

Besides the intensive work going on with new compounds for TB and dengue fever, Emory is deeply involved in research aimed at drug-resistant strains of HIV. Chemists working with the EIDD have identified a unique class of compounds called entry inhibitors, which may thwart the virus from penetrating uninfected cells.

In collaboration with Zyrus Inc., an anti-viral drug maker located in Buford, Ga., Emory is developing a new approach that pinpoints specific host cell genes that play a role in the replication of the influenza virus. The university's computational chemistry program is working with Zyrus to identify small molecules that modify the product of these genes to make them active anti-viral agents.

STROKE AND ISCHEMIC INJURY

Emory's computational chemistry program and the Department of Pharmacology have discovered a series of compounds that seem to protect tissue when blood flow to the brain is interrupted, the cause of most strokes. The com-



Haian Fu is searching for a drug to treat the deadliest brain tumors, using technologies that dramatically speed the process.



Stephen Warren, who led the team that discovered the mutated fragile X gene, is now leading a clinical trial on a drug to treat the condition.

pounds block dysfunction in the receptors on nerve cells that cause them to die from lack of oxygen. Animal experiments have shown that they can improve therapeutic benefits and reduce the side effects typically associated with drugs to treat ischemic injury. The compounds have been licensed to NeurOP, an Atlanta biotech firm founded by Raymond Dingledine and Stephen Traynelis, two Emory researchers who have done much of the work with the compounds.

TRAUMATIC BRAIN INJURY

The work of Emory professor Donald Stein with the hormone progesterone in treating traumatic brain injury is well known. The EIDD is helping him develop a modified, soluble form of progesterone to work faster than the version now being clinically tested in patients with brain injuries. A field-ready version of progesterone could be administered by emergency medical technicians at accident scenes and by military medics on the battlefield.

TRANSPLANTATION

The Emory Transplant Center helped develop a new transplant immunosuppressant called belatacept, currently awaiting FDA approval. A recent trial showed that kidney transplant patients taking belatacept had graft survivals similar to those taking cyclosporine, while maintaining higher kidney function and lower blood pressure and cholesterol. In addition, belatacept can be given once every few weeks compared with twice daily dosing regimens necessary for standard immunosuppressive drugs.



Pictured throughout this article are residents of Wesley Woods Towers apartments and Emory medical students who participated in the aging course.

The LENS of AGING

Emory's medical school is teaching young doctors what it is like to grow old and how to better care for elderly patients.

By KAY TORRANCE • Photography by JACK KEARSE • Illustrations by LINDA DOBSON

The 70-year-old woman enters the exam room in a wheelchair. She recently fell off a stool and hurt her back, she tells Emory geriatrician Manuel Eskildsen.

Through a series of questions, Eskildsen learns that the woman has not fallen before or had balance problems. He decides to order some x-rays just to rule out a broken bone. If the patient were younger, the conversation might end there. But Eskildsen probes further, asking the woman pointed questions about her life. He learns that her spouse died four years ago, and she's having trouble doing things around her house. She goes to church but doesn't have much social interaction beyond Sunday. After Eskildsen makes some recommendations to her—getting some short-term in-home help and starting physical therapy—the woman leaves.

Some 140 Emory medical students are carefully listening to this patient's conversation with her doctor. The "patient" in this scenario is an actor, and she and Eskildsen have just been role-playing a fairly typical encounter between a geriatrician and a senior patient.

"So what do you think?" Eskildsen asks the students after the lights come up in the auditorium.

"If I'm ever old, I want you to be my doctor," says one student.

"Well thank you. *If* you are ever old?" Eskildsen responds.

"She's lost her social support," volunteers another student.

"Right. It is crucial to ask geriatric patients about family and general social support," says Eskildsen. "Their answers can make a difference in treatment choices, living arrangements, and end-of-life care." The discussion turns to whether frailty leads to injury or injury leads to frailty. (Correct answer: both are true.)

These medical students are learning about the process of aging, how to treat geriatric patients, and how to talk about dying—topics that most doctors in practice now didn't cover when they were in training.

Aging 30 years in one week

In years past, medical schools traditionally offered little instruction about geriatrics and limited contact with patients until the third year. But Emory and other leading medical schools around the country are redefining how future doctors are educated.

Among the changes are new curriculums that are less focused on disease and more centered on patients. Gone are old-school, lecture-based courses. They've given way to more engaging, experiential courses and modules on topics such as aging and cardiology, where students learn the science of disease while working with patients to understand firsthand experiences. Today's best medical schools want to produce not only the best but also the most compassionate doctors.

The students enrolled in the week-long aging module at Emory's medical school recently watched a patient (actor) age from 50, as she entered menopause, to 80, when she was dying of cancer. They listened to the perspectives of two caregivers, who discussed their loved ones' conditions, the changing relationship between loved ones and caregivers, and the caregivers' organizational struggles to manage a dizzying array of doctors and medications. They heard from a 66-year-old man living with advanced prostate cancer who was coping with his own mortality.

What they saw spurred all manner of questions. How receptive are patients to behavior modification? How is the approach of a

geriatrician different from that of an internist who sees elderly patients? What happens inside the body to cause pressure sores? What role does obesity play in the physical changes of aging? How much information or questions do you direct toward the patient versus the caregiver?

Have you ever thought you might be dying?

Emory hospitalist Noble Maleque draws a blue line across the whiteboard. He's leading a group of eight students in a conversation about death and dying during the final day of the aging module.

"If you could choose how you were going to die, would you want to go suddenly or have up to six months' notice," he asks. The students each place a sticky note with their name on the timeline. Four want to die suddenly, and the other four want at least two months.

"Now you are the doctor, and you know that your patient is going to die soon. Should you tell the patient?" Maleque says.

Of course, says one student.

Not quite, Maleque says before recounting a recent clinical experience from real life—no actors this time.

His patient's T cell count was abysmally low at 2. (A healthy person's count is typically around 1,000.) AIDS had run its course, and the man was dying, and Maleque gently told him so. The patient later asked a hospital administrator why his doctor told him that he was dying. He had known that his condition was getting worse, but he had no desire to hear his suspected fate.

"But if I'm the doctor, that's what I'm there for," the student says. "The patient may not know their treatment choices, including to do nothing, so the patient needs to know if he will die."

"In that encounter with the patient with AIDS, I felt I had the right intention," Maleque says, "but I wasn't right because I didn't ask him if he wanted to discuss the progression of his condition. I should have addressed the issue before it came up."

Discussing death with patients is difficult, Maleque acknowledges. "It can be an emotional topic—and that's good. It's real life. I still have a hard time with death as a physician," he says, "and that's as it should be."



How does a young medical student experience how a senior feels?

The student is outfitted with colored ski goggles (vision changes), an arm brace (decreased strength), and a weighted backpack (weight gain). The student's legs are tied together to cause trouble walking, and the student is told to walk three feet and open a childproof pill bottle. Emory geriatrician Jonathan Flacker runs this exercise with first-year medical students so they will understand how physical changes in seniors impact their everyday lives.

New technology for understanding older patients

Emory's medical faculty would like nothing better than to take all the medical students into Wesley Woods' outpatient clinic to observe geriatric patient exams. But the class of 2014 at 140 in number is the school's largest so far. Squeezing that many students into the clinic over the course of a week would be impractical. But Emory took a new approach during the aging module. Students were able to follow a different geriatrician each day via Twitter. Each afternoon, a geriatrician tweeted about cases to give students a sense of the variety and scope of the issues that a geriatrician handles daily.

Maleque is glad to see that Emory's medical students are getting prepped for such conversations. That was not his own experience in medical school, and the first time he experienced a patient's death during his residency, he felt inconsolable, he says. "I'm wondering if I had gone through exercises like this how I would have coped."

These sessions are designed to help students acknowledge their own feelings about death. They are held in a small group format to stimulate intimate conversation and debate, says Emory geriatrician Jonathan Flacker, who leads the aging module along with Eskildsen.

"Students have to come to grips with death and dying before they can help other people through the process," he says. "It's still important to treat people when a cure isn't there."

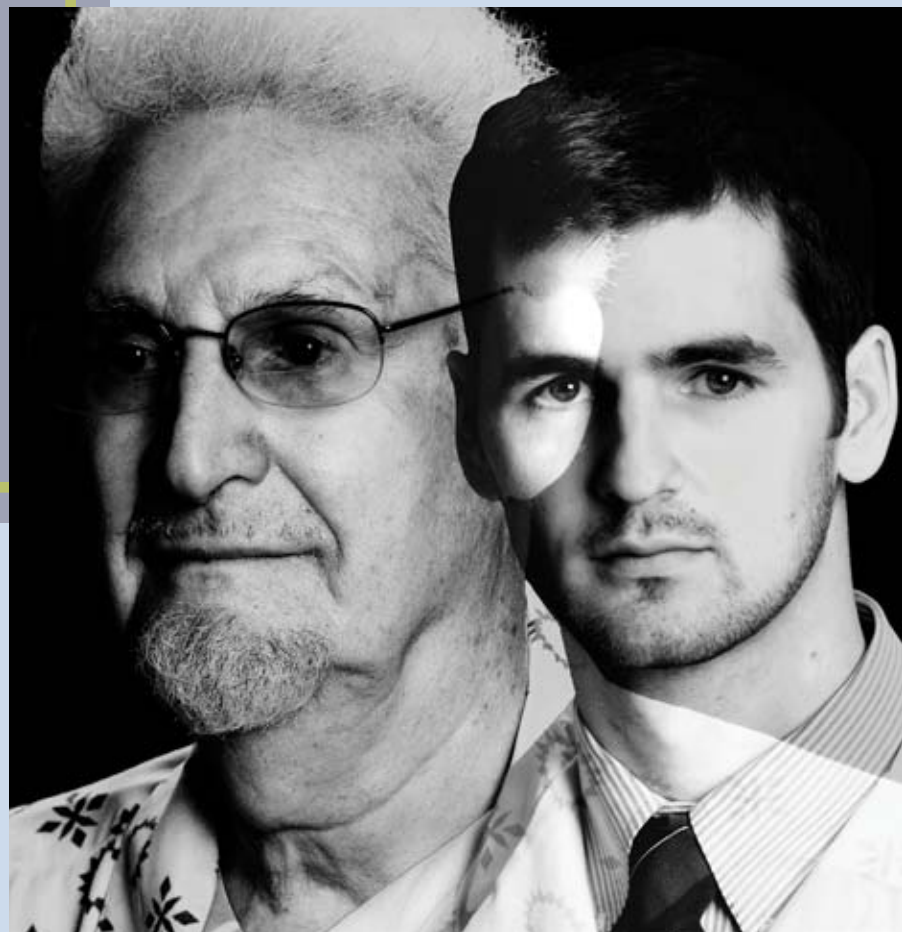
Through the patient skits, students see the right and wrong way to have a difficult conversation with a patient. A starting line, such as "Have you ever thought that you might be dying," can pave the way to a bigger conversation on quality of life weighed against the amount of time left.

Emory medical student Porntawee Aphivantrakul, who went through the aging module last November, came out with a reinforcement to keep the patient's perspective in mind. "It's easy to lose sight of that," she says. "Some people want to display compassion but find it difficult. This taught us the best way to approach patients."

The silver tsunami


Regardless of the medical specialty chosen by the students from the class of 2014, they most likely will care for geriatric patients. Flacker and other geriatricians refer to the America's changing demographics as an impending "silver tsunami." By 2050, those 80 and older will be larger than any other age group. (By contrast, in 1950 the largest age group was children under 4.)

The silver tsunami will demand that today's medical students know how and why senior patient care differs from other care. But first and foremost, Eskildsen and Flacker want students to understand that aging is not a disease.



"I want them to know what is different about older adults—biologically and physiologically—and approach them differently," Eskildsen says. "That awareness is the thing. They will get more clinical training later, but planting that seed now that geriatric patients are different will set them on a better course. I hope that we have punctured the myth that just because a doctor sees a lot of older people in his practice, he automatically can be assumed to do a good job of it. Older people are different, and we need to adjust our care."

Beyond teaching the defining principles of geriatric medicine, Eskildsen and Flacker also would be happy if the module stimulated interest in geriatrics as a career choice among students. There are only 8,000 geriatricians in the country, a number that is not expected to grow substantially.

Things will have to change to attract the best medical graduates to the field, says Flacker, including financing and reimbursement. "We also need to see a change in how people and our society value serving the elderly as a career," he says. 

WEB CONNECTION To hear some age-old wisdom from the older residents to the younger doctors, visit bit.ly/emoryaging.



diagnosis

life-changing



By carefully monitoring glucose levels, patient Landon Hosea controls his diabetes to stay active and enjoy jamming with his dad or family ski vacations (above left).

[Targeting a drug originally designed to treat psoriasis, Emory investigators are searching for a way to reverse type 1 diabetes.]



Emory pediatrician Mark Rigby is often the first person to see families like the Hoseas (left) after they learn that their child has diabetes. That's because once children reach Rigby in the pediatric intensive care unit at Children's Healthcare of Atlanta, they are often very, very ill. They can have life-threatening dehydration, an altered consciousness, and/or severe metabolic abnormalities.



By ROBIN TRICOLES

After the acute shock, equally sobering is the realization that the family's life will never be the same. "A diagnosis of diabetes means the life the child and the family knew is gone," Rigby says.

From that day forward, children will require an insulin shot perhaps several times a day. To keep blood glucose levels within a healthy range, they will need to check their sugar levels throughout the day and record everything they eat. They'll even need to note current and anticipated physical activity so that carbohydrate intake and insulin can be adjusted to fit the body's needs. Last, and just as important, a diabetes diagnosis means making sure that insulin is always at hand whether via syringe, pen, or pump.

Early on, type 1 diabetes often goes unrecognized because the children who have it usually appear healthy and fit. "Even after kids are diagnosed, you would never guess that they're carrying around insulin shots, sugar, and a glucometer in their backpacks," says Rigby, "or that they have to go into a bathroom before lunch and prick their finger to measure their sugar before they eat."

One family's story

For Landon Hosea, 12, the symptoms of diabetes first appeared late last summer after a vigorous tennis game. They continued during a family trip to Florida. Familiar with the warning signs of type I diabetes, Landon's parents, Laurie and David Hosea, suspected

that their son might have the disease. They got confirmation not long after returning to Atlanta, where Landon was hospitalized and his diabetes subsequently diagnosed.

"When you get the diagnosis, it's pretty traumatic," says David Hosea. "You go through a crash course to deal with this."

The biggest adjustment for the Hoseas was staying vigilant about monitoring Landon's carbohydrate intake and teaching their son to keep track of the count—not as easy as it might sound. Carbohydrates are the body's main source of energy, and tracking carbohydrates in children is trickier than in adults because the kids are still growing.

David Hosea learned to be aware of the carbohydrates that Landon consumed without necessarily limiting them, allowing his son to consume calories needed for activities and growth. Landon is both active and growing. During a recent family ski trip to Colorado, he spent most of his time ski jumping, his favorite part of the sport.

Another detail the family absorbed early on was to take blood for glucose monitoring only from the fingertips of Landon's right hand. The fingers on his left hand, he will tell you, are reserved for playing the guitar.



Supporting player In addition to drug trials like the one described here, Emory is pursuing other research avenues to find a cure for diabetes, including islet transplantation. Much of Emory's progress in understanding and reversing type 1 diabetes through both autoimmune and transplant studies has been supported by the Juvenile Diabetes Research Foundation (JDRF). In fact, since 2002, the JDRF has given more than \$19.7 million to Emory to search for a cure.

The islets of Langerhans are clusters of cells in the pancreas that produce insulin in response to glucose levels in the blood. For transplantation, the islets must first be separated from other cells in the pancreas of the donor and then infused into the liver of the recipient. Recent advances in isolating the islets hold the promise of making islet transplantation more common in the foreseeable future.

The first islet transplant in Georgia was performed at Emory in 2003, and currently Emory is the only islet cell transplant program in the state. As of August 2010, Emory transplant surgeons have performed 22 successful islet transplant procedures on 15 patients.

WEB CONNECTION To see a video about islet transplantation, visit whsc.emory.edu/soundscience/archives/larsen.html. To learn more about the JDRF, visit jdrf.org.

Much in common

Although not apparent from how it presents or traditionally is managed, type 1 diabetes bears a striking resemblance to other diseases such as lupus, Crohn's disease, rheumatoid arthritis, psoriasis, and multiple sclerosis. All of these illnesses are autoimmune diseases. "In all of those diseases, the immune system attacks various parts of the body," says Rigby, "whether the joints in rheumatoid arthritis, the kidneys and blood vessels in lupus, the central nervous system in multiple sclerosis, or the gastrointestinal tract in Crohn's disease. Basically for every bodily system, there's an associated autoimmune disease."

Because of the common characteristics of autoimmune diseases, science has seen an explosion—"a good explosion," says Rigby—in understanding how the immune system works. Crosscutting research has allowed development of drugs that attack specific tar-



Putting diabetes in the corner pocket: The Hosea parents have tackled their son Landon's diabetes together. By helping Landon keep track of carbohydrate intake, they insure he gets enough energy to keep growing and enjoying family activities.

gets without triggering system-wide immune suppression. The specificity of these drugs helps prevent untoward infections, and they are less toxic to the kidneys, liver, and nervous system than older drugs.

What's more, researchers now know that if a person suffers from an autoimmune disorder, family members are at higher risk for an autoimmune disorder. "If there's a family member who has type 1 diabetes, there is a 20% chance that another family member has another autoimmune disease, such as celiac or thyroid disease," says Rigby, who is part of the newly named Emory-Children's Pediatric Research Center and whose own research overlaps with transplant research.

Organ rejection occurs when the body's immune system attacks the transplanted organ because the body perceives it to be foreign, not unlike a damaging bacteria or virus. "It seems clear that the processes that cause organ rejection also participate in autoimmunity, specifically type 1 diabetes," says Rigby. "It stands to reason that if we can find drugs to slow or prevent transplant rejection, the same drugs may be useful in autoimmune disorders such as type 1 diabetes."

Through fundamental basic science research on immune cells, scientists are now developing drugs to specifically target the most destructive cells in organ transplant

and autoimmunity. Many of these appear to be well tolerated with minimal side effects. In fact, they are so promising that scientists can begin to evaluate them in patients with type 1 diabetes to try to reverse the condition.

T cells run amuck

In 2003, the FDA approved the immunosuppressant drug alefacept for treatment of another autoimmune disorder, psoriasis. Since then, researchers have learned more about how the drug works. They now know that alefacept attacks a certain subpopulation of renegade T cells.

T cells function to help fight infection. In psoriasis, however, misguided T cells attack the skin, causing lesions and scaling. In diabetes, similar T cells destroy beta cells, the insulin-producing cells that reside in the pancreas. And in those with a transplanted organ, T cells are largely responsible for organ rejection.

Rigby is leading a multi-site clinical trial to study the effectiveness of alefacept in controlling type 1 diabetes. It includes 66 participants across the country, ranging in age from 12 to 35. About 80% to 90% of people who develop type 1 diabetes fall within the pediatric age range.

The researchers are hoping that alefacept, administered via weekly shots, will kill or

deactivate the overactive "killer" T cells in the pancreas. "For the most part, T cells are exquisitely important for protective immunity from viruses and bacteria, even involved with cancer surveillance," Rigby says. "But in this case, they are doing harm, lots of harm."

The investigators hope to provide a balance by targeting overactive T cells and either deactivating or eliminating them. "With alefacept, we're trying to deplete or deactivate the bad actor T cells in the pancreas and in the process rescue the beta cells from further destruction," Rigby says. "Then we may be able to reset the balance by retaining protective T cells."

"An additional possible outcome would be that this approach re-educates the aberrant immune system so that when we stop the medicine, any residual misguided T cells are kept in check by the body's natural mechanisms and don't return to destroy beta cells."

Meanwhile, participants in the study continue to manage their diabetes normally. However, if they find their sugar level is normal, they may hold off on taking their insulin or take a reduced dose.

"We're hopeful about this trial because a significant number of people with psoriasis have experienced long-term remissions with alefacept," says Rigby. "We want something analogous with diabetes." ■

“Show me the numbers”



At the Emory/Georgia Tech Center for Health Discovery and Well-being, health partners are gathering data on what makes people healthier and happier. This interview by editor Rhonda Mullen with the center’s director, Ken Brigham, reveals what they are finding.

Q In your paper, “Predictive Health: The Imminent Revolution in Health Care,” you describe America as having a “disease care non-system” rather than a health care system. What do you mean by that?

A I first heard that description from Jim Curran, dean of the Rollins School of Public Health at Emory, and I think it so accurately describes how we in the United States approach medical care. Our system is disease-focused. Rather than health care, it is medical care. People enter the system only when they have disease. We have well baby clinics but no well adult clinics.

And it is a non-system because there is not one system but rather multiple systems that tend to operate in silos. A good example is the electronic medical record (EMR). Every health system has developed its own EMR, but it tends to work only in that system. It is not portable. Even some big systems like the VA, which does a tremendously good job on EMRs, isn’t compatible with the EMRs from another governmental

agency that provides care for a specialized segment of the armed forces. That’s just one example of how Balkanized the whole non-system of medical care is.

Q What does the predictive health approach involve?

A We’re saying focus on people while they are healthy. But first we have to define health. What about the distinction between health and exemplary health? What is different about people who are healthy, bright, and creative as opposed to people who can’t be diagnosed with a disease but who just aren’t as healthy as they ought to be?

The other premise is that if we provide people with information about their health and then give them support in figuring out what they are going to do to improve their health and the tools to make it happen, it will have a positive impact.

Q What happens at the center?

A The center is under the umbrella of

Emory’s Predictive Health Institute. I like to call it the demonstration model or predictive health in action.

When participants come here, they are introduced to a health partner, who stays with them through their whole experience. The health partners are a different kind of health professional. They are not doctors, nurses, or nurse practitioners, but they hold bachelor’s or master’s degrees and have completed an intensive curriculum in health-focused care and health coaching.

Participants fill out a number of computer-based questionnaires and surveys about their health. We next take a number of measures, including body composition, blood pressure, and pulse, and we collect blood and urine samples. We also look at bone density with a Decatron and cardiovascular fitness as measured on a treadmill.

At the end of the process, the participants sit down with their health partners to go over their health assessment. The 40-page report comes with a dashboard that summarizes all the information in a

We pay too much for health care, close to twice what most other developed countries pay, says Ken Brigham. Enter predictive health, with a fundamental premise that keeping people healthy should be cheaper and more efficient and have a greater return on investment than simply waiting for disease to happen before we intervene.



way that is easy to understand. The health partner combs through the report and identifies areas and opportunities.

The participants themselves drive the health action plan. Once they've made their own goals, the health partner helps them figure out how to get there and what is realistic.

Q You've talked about the need for a horizontal approach to health. What does that mean?

A A vertical relationship is what you've probably experienced with your doctor, where the doctor is the authority figure and tells you what to do. But we know that doesn't work because 30% of the prescriptions written by doctors are never filled. And according to numerous studies, half of the

people who see doctors don't do what the doctors told them to do. Part of the problem is communication because they didn't understand what the doctor told them. But it's more than that. Even if people understand what to do, they don't do it.

Just being told what to do in a one-time encounter, doesn't change people's behavior—even when the person is sick. This authoritative proscriptive approach to health doesn't work.

By contrast, the horizontal relationship or partnership idea is that we are on the participant's side. The health partners are not judgmental or punitive. Their goal is to engage people, educate them in the sense that we tell them more about their health than they ever knew before, and empower them to help them figure out to do what they want to do. We then promote and support them on the way to their goals and observe their outcomes.

Q Can you describe the research the center is doing and what you've discovered so far?

A Part of what we're learning comes from a cohort of healthy Emory employees who were drawn from a random sample. We describe them as "essentially healthy" because it turns out they do have some things that are wrong with their health. Our data includes a whole battery of questions that doesn't just include physical health but also mental health, social supports, sleep patterns, quality-of-life measures, and spirituality.

If you look at the cohort as a whole, the partnership seems to work. We've measured improvements in physical health, and they've been accompanied by improvements in well-being, quality of life, depression, and stress.

We're also collaborating on a study on healthy aging with a different cohort. Most clinical studies in older adults have focused on disease or injury (what can go wrong). There is little detailed information that defines optimal health (what can go right) as a function of aging.

Arshed Quyyumi in cardiology has gathered information on close to 300 people

We can't keep doing what we're doing because we're going broke doing it. And we are not healthier as a population than other countries that spend a lot less money on health care. We need hard data. Is this approach cost-effective? What could we do differently that could work as well that might be cheaper?



who are exceptionally healthy and range in age from 20 to 80. They have normal blood pressure and normal body mass index, take no medications, and have no known diagnosed disease. He has looked at many of the same things that we are measuring on our essentially healthy people in relationship to age. We are comparing our people with his people.

What we've found so far is that a lot of things change with age, no matter how healthy you are. For example, one of the measurements of vascular disease is the thickness of the carotid artery in your neck. That goes up with age, no matter your state of health. If you take our 700 people, the slope of the line is steeper, indicating that their arteries get thicker at a faster rate than those of the exceptionally healthy group. What we don't yet know is, if people change their behaviors, can that trigger a switch to the lower sloped line.

Q Can the model followed at the center translate to the broader society?

A I think it will. In fact, the basic concept has to. We can't keep doing what we're doing because we're going broke doing it. And we are not healthier as a population than other countries that spend a lot less money on health care.

More to the point, the question is, is this model scalable? It is probably not as it exists here because much of what we are doing is research-based. But I think what we learn from these studies will show us what is most valuable and what works best.

Q What is the next step in making a change from a disease to a health model?

A You have to sell the idea to someone who will pay for it. We're talking with self-insured employers, trying to partner with them in pilot studies to demonstrate what can be done. If we talk to HR people, their first question is, how much money will it

save me next year? If I say to Peter Barnes [director of Emory Human Resources]—"Look at how much healthier and happier your employees are. Statistically speaking, they must be better employees," his response is, "Show me the numbers."

We need hard data, and our collaborator Bill Rouse at Georgia Tech is helping us get those numbers. He is taking the whole center experience and doing an in-depth analysis of economic models related to the approach. Is it cost effective? What could we do differently that could work as well that might be cheaper? He also is chairing an Institute of Medicine subcommittee that is using data from the center as a model basis for a national discussion.

In the end, we have to figure out how to put a dollar value on well-being and other things that we believe are important in defining health.

WEB CONNECTION To learn more about the center's approach to health, visit emory-healthdiscovery.com.

Bringing space findings down to Earth



IT GOES WITHOUT SAYING THAT SPACE TRAVEL IS RISKY. But one of the risks unexplored until now is the effect of chronic exposure of space radiation on astronauts. With a \$7.6 million grant from NASA, researchers from Emory's Winship Cancer Institute and the Medical College of Georgia (MCG) will study how space radiation affects the health of astronauts—with implications for radiation exposure on earth.

Through the establishment of a NASA Specialized Center of Research (NSCOR), the scientists will study high-energy charged particles (HZE), which are encountered in space. These particles result in complex damage to DNA and a broader stress response by the affected cells and tissues. While no epidemiologic data exists for human exposure to HZE particles, estimates have been made based on uranium miners and Japanese atomic bomb survivors, says Ya Wang,

director of the NSCOR at Emory.

Animal experiments show that HZE particle exposure induces more tumors than other forms of radiation such as x-rays or gamma rays. Scientists suspect that astronauts may be at a higher risk of developing lung cancer because of exposure to HZE particles. However, the risk is unclear because astronauts may receive only a low dose of HZE, Wang says.

The Emory-MCG researchers will probe whether the broader stress response induced by HZE particles amplifies cancer risk.

In addition to generating critical information for estimating the risks and finding countermeasures for cancers associated with long-term space travel, this research is likely to shed “new insights into cancer resulting from all types of radiation exposure, including those found on earth,” says Emory radiation oncologist and biochemist Paul Doetsch, who is associate director of NSCOR.

Waste not The numbers are in on a new waste-to-compost program at Emory. In 2010, three hospitals—Emory University Hospital (EUH), EUH Midtown, and Wesley Woods Geriatric Hospital—diverted 123,190 pounds of food waste from landfills and garbage disposals. That includes preconsumer waste (scraps generated in food preparation) and postconsumer waste (food left overs after being served to a patient).

The green effort did not come without its challenges, says Lynne Ometer, director of food and nutrition services for Emory Healthcare. At Midtown, for example, the kitchens are two floors above the loading dock. Ometer had to develop a system for

transporting the 30-gallon composting containers to a location where they could be collected by Greenco Environmental, an organic recycling company that processes the waste into compost material to improve soil and provide nutrients for plant growth. And composting at EUH had to come to a halt in the hot summer months when the composting bins, which are picked up every other day, attracted too many flies.

Still Ometer is pleased with the success of the hospitals' sustainability efforts. Kitchen staff were receptive to learning how to sort the food waste—even though it would have been easier to put it down the garbage disposal, she says.

And building on the initial success, Emory Healthcare is continuing its green efforts with the introduction of compostable take-out containers in the hospitals and a planned expansion of the program to Emory University Orthopaedics & Spine Hospital.

As Ometer says, “It’s the right thing to do.” —Rhonda Mullen



Family ties

Internationally renowned concert violinist Robert McDuffie remembers the day in 1996 when Emory neurologist Allan Levey diagnosed his father-in-law, the real estate developer Charles “Mack” Taylor, with Alzheimer’s. “He met with our entire family so that we all understood the implications of the disease,” McDuffie says. “He was always there for us as another family member, offering comfort, guidance, and support.”

Almost three years after Taylor’s death, the whole family came together again last November to help raise awareness and support for the Emory Alzheimer’s Disease Research Center (ADRC) with a performance by McDuffie at Emory. As McDuffie premiered a Philip Glass work, he remembered hearing Mack pick out *Rhapsody in Blue* by ear on the piano. Later his father-in-law would lose the ability to play or even recognize a melody.

Fittingly called “A Family Affair,” the event was exactly that: families affected by Alzheimer’s banding together to fight back and raise awareness for the ADRC, the only NIH-designated Alzheimer’s Research Center in the Southeast. Taylor’s family—daughter Camille McDuffie and son-in-law Robert, daughter-in-law Gretchen and son Andrew Taylor, and his widow Mary Rose Taylor—chaired the event that embraced a larger family affected by neurologic disorders.

Among the organizers were PR professionals Randy Jones and Cecile Jones, former NBC producer Charlie Ryan, fundraiser Barbara Howell, foundation manager Barrett Krise, and marketing professional Nina Cheney—all personally affected by family members who have had Alzheimer’s and/or Parkinson’s and many who received treatment at the ADRC at Emory.

Since the event, Mary Taylor has continued to grow the family team, drawing on her connections as a former broadcast anchor and founder and executive director of the Margaret Mitchell House.

“As I watched Alzheimer’s disease consume more and more of my husband’s brain, I developed a reverence for the brain,” Taylor says. “The brain is the last frontier of science, and we know so little about it.”



Violinist Robert McDuffie performed a concert with the Venice Baroque Orchestra at Emory to raise support for Alzheimer’s research.

What Taylor does know is that, if solutions are to be found, it will take the best research and clinical trials at national centers like the ADRC working collaboratively with other centers. At Emory’s ADRC, directed by Levey, a multidisciplinary faculty from across the university sees patients in the clinical setting and does research on early diagnosis, treatment, and prevention of the disease.

In 2010, its ongoing research received an \$8 million boost in funding when the National Institute of Aging approved renewal of Emory’s ADRC designation, the highest status an institution can receive in Alzheimer’s research and care. Three current projects—from animal studies to clinical research—are examining the role of normal aging, the transition from normal aging to mild cognitive impairment, and the earliest stages of dementia. Emory researchers believe the key to preserving brain health is early detection of cognitive impairment, and they are developing tools for detecting symptoms that will become part of patients’ annual physicals.

As the Emory physician/scientists continue to explore the frontier of memory loss, the families of those affected by neurologic disorders are continuing with their own efforts to raise awareness and money. In April Gannett and WXIA honored the Emory ADRC in its annual Community Service Awards program, in what Taylor hopes will be a kick-off platform for a year-long educational television campaign about brain health.

“It is said that genetics loads the gun, and environment pulls the trigger,” Taylor says. “We have to get people to think about their brain and how they might alter their behavior to keep their brain healthy. We have to find effective treatments, or this will become our children’s inheritance.” —Rhonda Mullen

WEB CONNECTION To learn more about the Emory Alzheimer’s Disease Research Center, visit med.emory.edu/ADRC or call 404-728-6950. To support the center’s research, contact neurology development director Barry Steig 404-727-9099 or bsteig@emory.edu.

A vaccine for all flu seasons

Because of the high variability of flu viruses, every year scientists must develop new vaccines that are specifically oriented to combat the strain that appears likely to circulate that year. But what if a vaccine with super hero qualities could be created which protects from a host of influenza strains and lasts far longer than one flu season?

Thanks to an unexpected immune response to the 2009 H1N1 pandemic flu strain, the concept of a universal flu vaccine is now a strong possibility, says Rafi Ahmed, director of the Emory Vaccine Center and a Georgia Research Alliance Eminent Scholar.

In fact, Emory scientists currently are working on just such a groundbreaking vaccine. “We are learning from immune responses that are teaching us how to design vaccines in new ways, based on the information we got from these unexpected antibodies,” says Ahmed.

The surprising 2009 H1N1 findings resulted from a collaboration between the laboratories of Ahmed at Emory and researcher Patrick Wilson at the University of Chicago. Results of their study, recently published in the *Journal of Experimental Medicine*, showed that a group of patients who were infected with the 2009 H1N1 strain developed broadly protective antibod-

ies against a variety of flu strains—including all the seasonal H1N1 flu strains from the past decade, the deadly “Spanish flu” strain from 1918, and the pathogenic H5N1 “bird flu.”

How did the 2009 H1N1 virus spur such a high proportion of antibodies? Ahmed thinks it’s because the 2009 H1N1 flu was so different from other varieties of flu.

The key involves influenza hemagglutinin (HA), a vital part of all flu virus “machinery.”

Shaped like a mushroom with a “head” and stem-like region, HA is responsible for binding the virus to the cell that is being infected. While it is known



Emory researchers are seeking the ultimate, all-encompassing, super hero flu vaccine—a single flu shot that would provide such broad, lasting immunity that annual shots would no longer be necessary.

that the HA stem region is broadly cross-reactive, the antibodies generated there normally don’t persist after an annual flu shot or after infection with a seasonal flu strain. But they did after the 2009 H1N1 infection.

“If the virus were related more to previous influenza strains, we would not be getting all these antibodies. The HA ‘head’ would be so similar to other influenza viruses, it would basically activate just those B cells and we would get those specific anti-

bodies,” Ahmed explains. “Instead, a high proportion of broadly protective antibodies were produced that reacted to the stem region of the HA.”

The antibodies were found to protect specifically against all the H1 influenza strains as well as the H5, or bird flu, strain. But they were ineffective against H3 influenzas. “There are regions of the HA stem which should with the right immunogen crossover and result in antibodies that protect also against H3,” Ahmed says. “With the right immunogen that is common to all of the strains, I think it should be possible to generate these responses.”

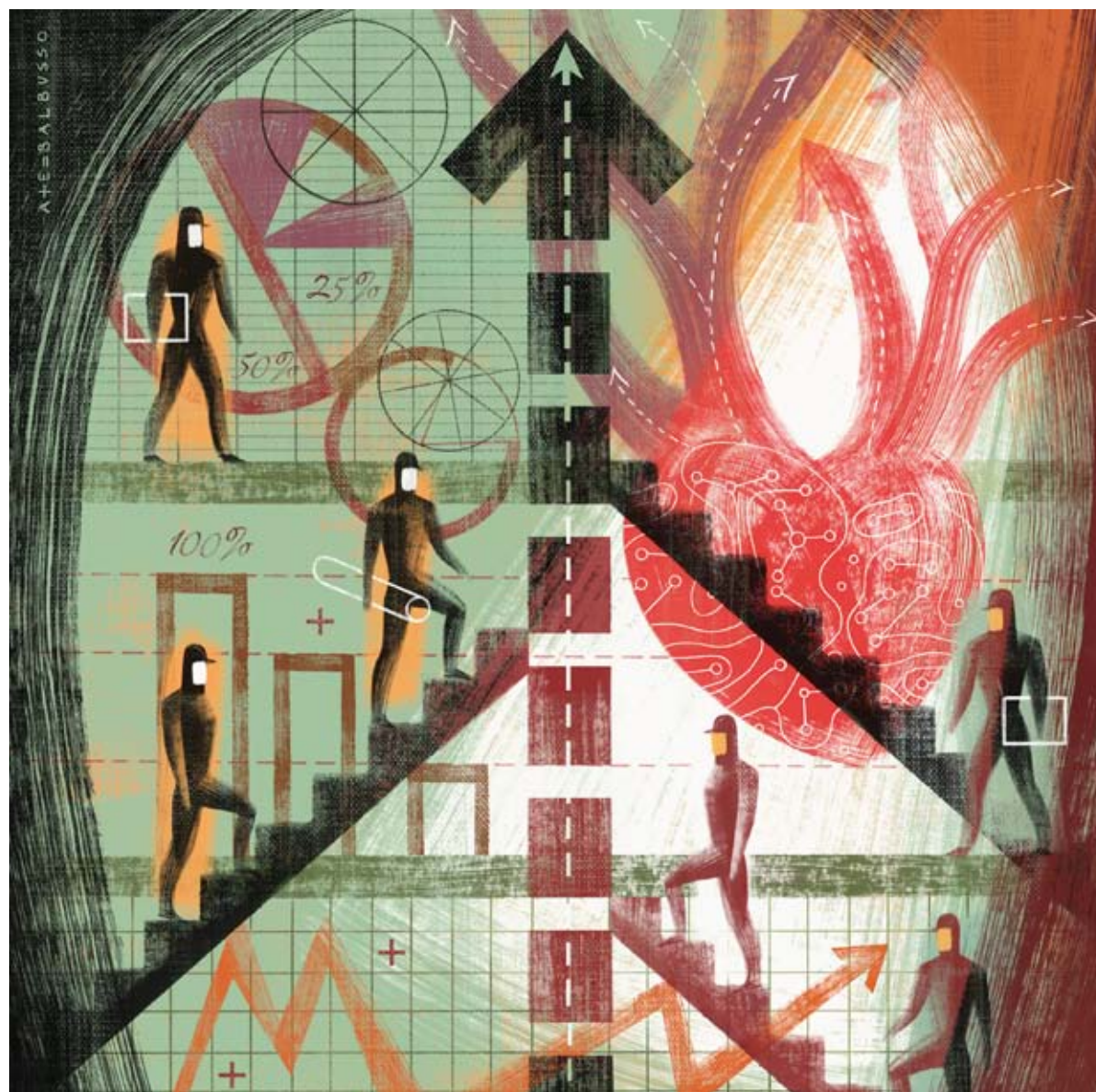
That would result in an ultimate, all-encompassing flu vaccine—a single flu shot that would provide such broad, lasting immunity that annual shots would no longer be necessary. “It would transform the vaccine strategy that we have now,” says Ahmed.

At present, various research groups are working to design such a vaccine, using what has been learned from the 2009 H1N1 findings. Ahmed’s group is collaborating with investigators at Mt. Sinai Hospital on pre-clinical tests in mice of a “headless” vaccine using only the HA stem region of the flu virus. If the results are successful, the investigators will move to studies in nonhuman primates. Ahmed expects phase 1 clinical trials in humans to begin in approximately five years.

So while finding the ultimate super hero of flu shots remains in the future, it no longer seems elusive. “Our findings have given us a lot of hope and optimism toward the goal of an influenza virus vaccine which would protect against multiple strains,” Ahmed says. —Sherry Baker

An alternative to cracking the chest

With a catheter the size of the little finger, *Emory physicians are healing hearts.*



Emory doctors are pioneering a minimally invasive procedure to treat people with a common and potentially deadly heart condition who are too frail to undergo open heart surgery. The condition—severe aortic stenosis—is a narrowing of the aortic valve that results in restricted blood flow and immense strain on the heart. Of the 300,000

Americans who suffer from severe aortic stenosis, about a third are too frail or too ill to qualify as candidates for traditional surgery.

Emory University Hospital is one of 20 hospitals nationwide that since 2007 have studied a nonsurgical method of replacing diseased valves in such patients. As part of a phase 2 clinical trial, Emory physicians have

performed transcatheter aortic valve implantations (TAVI), comparing the outcomes with traditional open heart surgery and medication therapy.

The procedure involves mounting the new valve on a catheter and inserting it either through a small incision in the groin or through the chest wall. “Both methods use a relatively thin catheter, about the size of your little finger,” says cardiologist Peter Block, who is the principal investigator (PI) of the study at Emory. “Once it is properly positioned, the new valve just moves the old one aside against the blood vessel wall and the blood can flow normally again.”

In the study, Block leads a multidisciplinary team, including fellow cardiologist Vasilis Babaliaros, who worked with the French cardiologist who implanted the first catheter-delivered valve

in 2002. Working with the cardiologists are cardiac surgeons Robert Guyton (co-PI) and Vinod Thourani, as well as echocardiographers and anesthesiologists. “This procedure requires multiple areas of expertise,” says Block.

Block and his team already have performed TAVI on more than 125 patients—



Cardiologist Peter Block (left) is leading a team that includes Vasilis Babaliaros (right), cardiac surgeons, and others who treat severe aortic stenosis in patients like Glenrose Gay.

one of the largest patient loads in the entire clinical trial. They are now moving to the next phase of the study, which will test a slightly smaller version of the device.

The results so far have been promising. "Our trials indicate that TAVI is highly effective and saves lives," says Block. "We've seen a 20% difference in mortality rate using TAVI versus standard medical therapy. Patients who had replacement heart valves delivered by catheter were more likely to survive a year than patients who were treated with standard medication therapy."

Compared with open heart surgery, the transcatheter valve procedure takes about 90 minutes instead of the four to six hours required in surgery. Many patients report feeling improvement immediately and often can be discharged within two to three days, versus a two- to three-month

recovery period for open heart surgery.

With such promising results, Block hopes the FDA will approve the procedure within the next year for patients who are not candidates for surgery. Indeed, the practice already is being used in Europe with success. "More than 20,000 patients in Europe have been treated with these types of devices," says Block.

When TAVI does receive FDA approval, Emory will be well positioned to offer the procedure for patients. "We have the greatest experience in the Southeast, and we have one of the highest trial enrollments nationwide," says Block. —Martha McKenzie

WEB CONNECTION For more info, call 404-778-7777 or visit emoryhealthcare.org/connecting/healthconnection.html.

Emory/Saint Joseph's partnership

In March, Emory Healthcare and Saint Joseph's Hospital announced a new partnership between the two systems. This development will help meet the needs of a growing population during an era of health care reform, a consolidating health care environment, and rapid economic change. It creates the largest, most clinically comprehensive health system in Georgia.

"Combining the excellence of our physicians, skill and experience of our clinical staffs, and promise of our research capabilities only strengthens what we offer patients," says John Fox, president and CEO of Emory Healthcare.

The partnership—in which Emory Healthcare will hold a majority ownership of Saint Joseph's

with a 51/49 percentage split—is consistent with Emory's strategic goals as a destination for quality patient care, education, and research. It also augments planned reinvestment in strong campuses at Emory University Hospital (EUH) and EUH Midtown.

The partnership allows Saint Joseph's to retain involvement in governance of the new joint operating company and have super majority voting rights on certain issues critical to its mission. The partnership is subject to review by the Catholic Archbishop of Atlanta, and it is anticipated that Saint Joseph's will continue as a Catholic facility sponsored by the Sisters of Mercy.



Treating lung cancer, case by case

Suresh Ramalingam has treated hundreds, if not thousands, of lung cancer patients. He knows that lung cancer is a particularly cruel disease. The five-year survival rate is only 15%. But in the past three years, he has seen the realm of possible treatments for lung cancer grow. “It has never looked so promising,” he says.

For example, oncologists now can offer individualized treatments to many lung cancer patients who fail to respond to chemotherapy.

“Lung cancer is not one disease,” says Ramalingam, an oncologist at Emory’s Winship Cancer Institute. “Eight-five percent of lung cancer cases are due to smoking, and how carcinogens affect one person versus another varies. As a result, one person may have DNA damage in one molecular pathway and another person in a different molecular pathway. So one approach doesn’t work.”

At Winship, a patient’s tumor tissue can be tested for one of 13 known molecular abnormalities. Treatments exist for two abnormalities,

Did you know?

Lung cancer is the second most common cancer and the No. 1 cause of all cancer deaths in the United States.

170,000 Americans die each year of lung cancer.

More women die each year of lung cancer than of breast cancer.



WEB CONNECTION To see a video about individualized lung cancer care, see bit.ly/lungcancercare. For clinical trials, visit cancer.emory.edu or call 404-778-1900.

and clinical trials are under way for the others.

For some patients, new treatments are able to make a vast improvement on their quality of life. One of Ramalingam’s wheelchair-bound patients was able to walk on her own after participating in a clinical trial for patients with an anaplastic lymphoma kinase (ALK) inhibitor. The ALK inhibitor is a gene that stops the normal growth of cells and encourages cancer cells to grow. Only 3% of patients with lung cancer have an ALK inhibitor.

This particular clinical trial illustrates the challenges of lung cancer research, Ramalingam says. Some molecular abnormalities exist in such a small percentage of patients that enrolling many of them in a clinical trial can be challenging. Moreover, some patients are embarrassed about their years of smoking and don’t pursue participation in clinical trials. Ramalingam hopes that one day there will be more survivors of lung cancer to talk about the disease and advocate for more volunteers. —Kay Torrance



Restoring Radiance

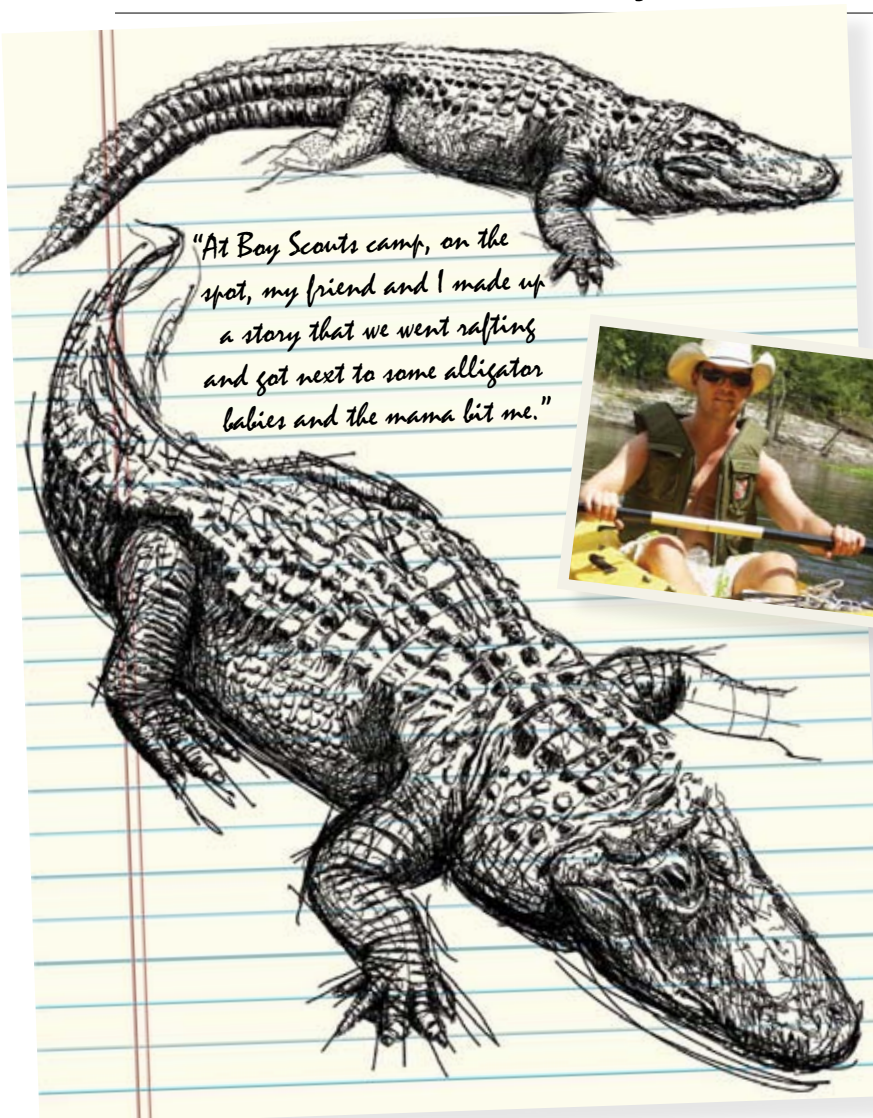
Elizabeth Goodman (standing) has some ideas to help cancer patients who suffer hair loss or other alterations to their appearance because of cancer. She consults daily with patients at the Radiance Boutique at Emory’s Winship Cancer Institute, helping them return to normalcy on their journey to recovery. Goodman has an arsenal of items to help patients, including wigs, compression garments, specialty bras, and prostheses. Wigs come in a variety of styles that are fitted to an individual’s head cap and ordered in a color to match the natural hair.



Compression sleeves and socks are available to provide the correct amount of constriction to increase circulation in those with vascular problems. And forms in many shapes and sizes help women feel beautiful after lumpectomies, breast reconstruction, and full and bilateral mastectomies. The boutique also offers a post-surgical camisole with drain pouches that are useful after surgery, which resembles a tank top that can fit with any patient’s wardrobe. “Offering patients dignity is our top priority,” Goodman says.

To set up an appointment, contact Elizabeth Goodman at 404-778-1264 or elizabeth.goodman@emoryhealthcare.org.

A scar that tells a story



If you're a teenager with a bad heart, it can be hard to talk about the scar running from your neck all the way down to your stomach or the cadaver valve in your chest. It can be difficult to explain the challenges of living with a rare congenital heart condition that has necessitated multiple surgeries.

So as a teenager a decade ago, Emory heart patient Andrew Sawyer got creative. "At Boy Scouts camp, on the spot, my friend and I made up a story that we went rafting and got next to some alligator babies and the mama bit me. So I had to have a little surgery to realign this whole thing." For the rest of the week, fellow campers ran up to Sawyer, exclaiming, "You're the guy that got attacked by the alligator!"

Now the teenager is all grown up. These days, the 25-year-

old works in pest management by day and croons country music by night. But the long "alligator scar" remains—as does Sawyer's sense of humor about his heart condition, tetralogy of fallot with pulmonary atresia, a rare condition in which a solid "plate" of tissue blocks blood from moving from the heart to the lungs. "If you think of the valve as a gate, it is locked shut in atresia," says Wendy Book, director of Emory's adult congenital heart center.

Sawyer's heart defect has necessitated six surgeries to date. The most recent—to replace that cadaver valve—was scheduled in the middle of his graduate school semester last year. The conversation with his professors was short. "I just said, 'I have to have a little minor surgery,'" Sawyer says. "I think it's funny when they find out later."

Sawyer has had plenty of time to practice understating his condition. But the scar that stretches from his neck to his stomach tells the full story: At his birth in South Georgia, his doctors realized that his pulmonary valve had failed to form and that he wouldn't survive without immediate intervention. He was rushed by helicopter to Children's Healthcare of Atlanta, where doctors put in a shunt to open up the newborn's valve area and provide his lungs with oxygen. He's been at Emory ever since. These days, he gets checkups at Emory's adult congenital heart center.

"After many years, if left untreated, the pulmonary insufficiency eventually results in right ventricular dilation, irreversible right heart failure, and life-threatening arrhythmias," says Brian Kogon, who performed Sawyer's latest surgery, replacing a pulmonary valve to prevent such complications.

"Andrew is a model patient, a fantastic person with an amazing spirit for music and for life," Kogon says. "People like Andrew make it easy to get up every day and do what I do."

Kogon and his team expect this latest valve to last for the next two or three decades, allowing Sawyer to continue to live an active, healthy life. And now that Sawyer has healed from surgery, he is not wasting any time getting back to his comic roots. His new heart valve has even given him new material to exploit.

"This time they used a cow valve," says Sawyer. "I ride by steak-houses and get a little teary-eyed." —Dana Goldman

WEB CONNECTION For more info, call 404-778-7777 or visit emory-healthcare.org/connecting/healthconnection.html.



more birthdays

John Seffrin, CEO of the American Cancer Society, ponders how to save millions of lives around the globe.

There has perhaps never been a more exciting—or challenging—time to be involved in the fight against cancer.

Despite the fact that according to recent World Health Organization projections, cancer will have replaced ischemic heart disease as the overall leading cause of death worldwide in 2010, our understanding of cancer and what to do about it is unprecedented. We know more today than ever before about how to battle cancer. The 11 million Americans alive today who have survived the disease are living proof of our progress, as are age-adjusted cancer death rates in the United States, which have declined for at least 15 successive years.

Looking back over the nearly 100-year history of the American Cancer Society, or even just in my lifetime, we have come so far in our understanding of cancer. When the Society was founded in 1913, cancer was an almost certain death sentence. Today, the hopeful side of the disease has never been so hopeful. Most people survive.

Fifteen years ago, the Society set aggressive

goals for the year 2015, to measurably reduce the impact of cancer, decreasing cancer mortality by 50%, reducing cancer incidence by 25%, and improving quality of life for people with the disease. We still have a long way to go to meet those goals, but we have come far down the path. How? By redoubling our efforts to research the causes and cures of cancer. By promoting and

elevating prevention into standard practice nationwide. And by ensuring access to quality health care for all Americans—a giant step taken by our nation last year.

In total, by my calculations, these goals for 2015 have helped avoid 767,000 cancer deaths in the United States. Another way to think of that number is that we've saved more than 350 lives per day that otherwise

would have been lost to cancer.

Looking forward, the future holds the promise of an even greater ability to control cancer, thanks to our ever-increasing experience and expanding knowledge from evidence-based research. In fact, I believe, and evidence strongly suggests, that cancer is potentially the most preventable and most curable of the major life-threatening chronic diseases facing humankind. It is what we now do with our knowledge about cancer that matters.

Global impacts

Although we have been making progress in the United States against this disease, the cancer fight around the globe tells a different story. Both in terms of lives and dollars lost, cancer's threat to global health has never been greater. Unless there is change, cancer will be the disease of the 21st century, simply because of a lack of intervention with what we already know how to do.

Noncommunicable diseases as a whole—including cancer, cardiovascular disease, diabetes, and respiratory disease—account for more than 60% of deaths worldwide, and yet less than 3% of all public and private developmental funding for health is spent on these diseases, according to the Center for Global Development. A 2010 Society and Livestrong report showed for the first time that cancer also causes more economic harm than any other cause of death worldwide, and just two noncommunicable diseases—cancer and heart disease—account for \$1.6 trillion in lost productivity every year. Noncommunicable diseases are simply not a current global priority and are absent as a topic from the United Nation's Millennium Development Goals (a key driver behind global health funding), G8 and G20 meetings, and funding allocations by major governments.

To the Society, the burgeoning cancer challenge presents an incredible opportunity to transform global health, to save thousands more lives every day around the world. We're not satisfied with saving 350 lives each day in our own country when we know we can achieve more and when the world at large is

facing a growing cancer pandemic.

At the American Cancer Society, we've begun a transformation of our organization to help bring cancer under control as early as possible in the 21st century. In the process, we believe we can help move the cancer dial exponentially—from saving 350 lives per day to 1,000 per day in the United States and potentially 10,000 per day worldwide.



John Seffrin's first encounter with cancer was when his grandmother died when he was 10. He has since lost his mother to cancer, and his wife, Carole, is a breast cancer survivor.

That is not an easy goal, but it's one we have the knowledge to achieve, if collectively we put the right resources behind it. I believe it is not only the right thing to strive toward. It is our moral imperative to do so. If we do not, we choose to ignore millions of avoidable deaths from cancer and a needless economic burden.

What will it take?

This major public health education challenge will require strong collaboration among all sectors—private, nonprofit, and government—to be successful. The quickest way to achieve that goal is to

- Prevent the cancers that are preventable
- Treat the cancers that are treatable
- Fix the fixable in our health care systems
- Provide state-of-the-art and dignified health care for all people facing cancer.

If we can build a collaborative approach to global health that can accomplish these four goals, I believe we can move that cancer dial by leaps and bounds. Our lifesaving results thus far are proof that we can indeed

make significant progress against this disease.

Applying these four approaches worldwide will take a concerted effort on many levels to transform global health, beginning with a successful United Nations high-level meeting on noncommunicable diseases in September 2011. This meeting marks an important paradigm shift in the global health community that acknowledges the need for the prominence of noncommunicable diseases on the world stage. It is vital that this UN meeting is a success, that leaders around the world and in our own nation recognize that cancer and all noncommunicable diseases are more than health issues alone. They are also economic and development issues, with ripple effects throughout all levels of society.

We must dedicate more resources and energy to cancer research worldwide as well as to strong and effective public health education campaigns. Through awareness campaigns, community-based interventions, and aggressive advocacy for better public policy, we can pursue a true systems change, transforming and balancing the world's health agenda. If we can do this, making cancer a true global health priority, we have the potential to strengthen health systems, bolster economies worldwide, move entire regions out of poverty, and save millions of lives.

At the Society, we would call that creating millions of more birthdays. I believe millions of more birthdays on a planetary scale is possible in this century—if we work together on what we already know that we need to do. —John Seffrin



WEB CONNECTION *The American Cancer Society is a valued partner of Emory, and Seffrin is a member of this magazine's editorial advisory board. To learn more about the Society's life-saving programs, visit cancer.org.*

More cow bell

Most distinguished awards from Emory University come with a traditional statuette and insignia. Not so the Pollard Turman Award that the Emory Alumni Association awarded college and medical school alum Walker Ray in March. Ray instead was conferred a cow—albeit an artistic cow rendered in crystal. The origins of the award go back to Turman, who believed it was the cow that wore the bell who led the pack and not the cowboy.

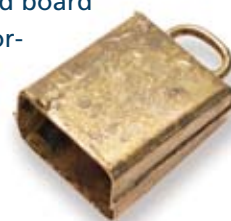
And Ray, a pediatrician in Atlanta for 38 years, has done his share of leading at Emory—serving as head of the medical alumni association and the alumni board, co-chair of Candler School of Theology's Committee of 100, a committee member



Pediatrician Walker Ray and his unusual bovine award for leadership

for the School of Medicine's campaign, and a member of *Emory Health's* editorial advisory board. Walker chose to split a \$25,000 check from the Tull Charitable Foundation that accompanied the award among Emory's medical school, pediatrics department, theology school, and a student scholarship—following President James Wagner's call to create a multi-versity instead of a uni-versity.

From the magazine staff to our devoted board member, we offer congratulations with borrowed words from Christopher Walken's Saturday Night Live skit—"more cow bell." —Rhonda Mullen



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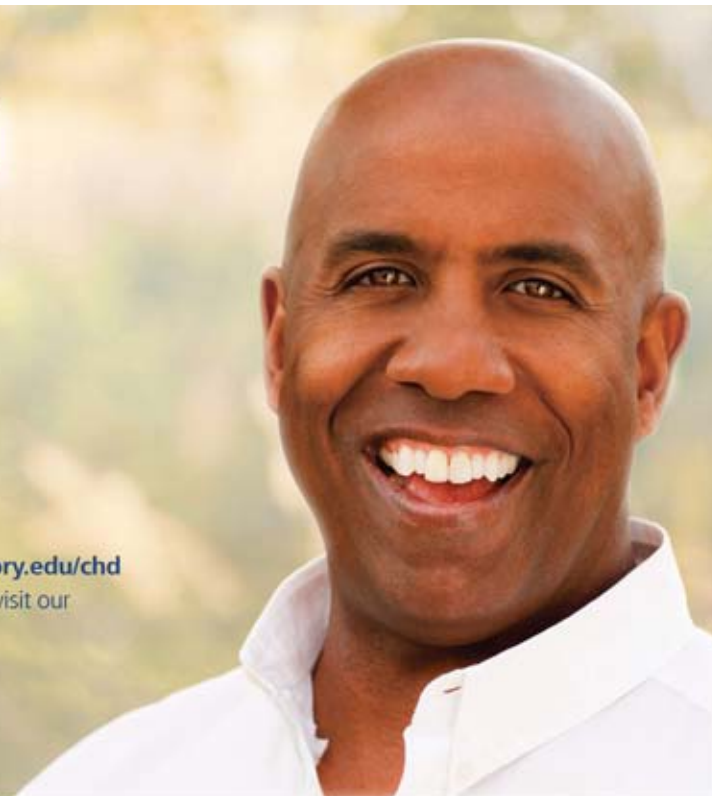
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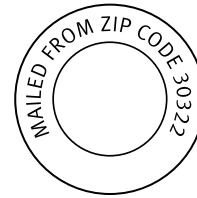
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THROUGHOUT HER CAREER, Susan Shapiro has tried to keep a finger on the pulse of clinical nursing, even when she traded her role in the emergency department for one in an office or a classroom.

Now an assistant dean at the Nell Hodgson Woodruff School of Nursing and associate chief nursing officer for Emory Healthcare, she works to link teaching and research with practice. "Nursing only really takes place between the patient and the nurse. We are here to serve bedside nursing by teaching nurses to incorporate research into practice," she says.

Because she believes in Emory, she has made a bequest to support the School of Nursing and nursing programs within Emory Healthcare.

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