ADVANCES IN RESEARCH, EDUCATION, AND PATIENT CARE AT DUKE

DukeMed MAGAZINE

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the life of this place

Documenting Duke Medicine

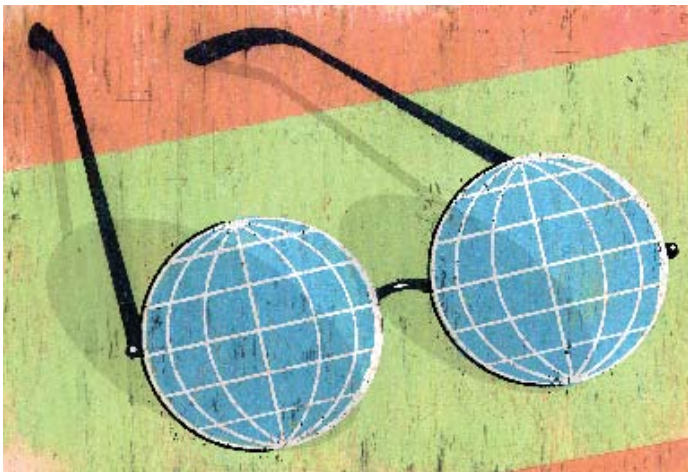
Better medicine

ONE OF THE MOST rewarding aspects of working in medicine—whether in the clinic, in the research lab, or in an administrative office—is being part of a team of fellow workers who share a fundamental dedication to caring for the sick and relieving suffering. The individuals on the team may come from very different backgrounds and have different areas of expertise. But regardless of how or why each of them entered the field of health care, each heeded the same high calling—one that I believe holds us to a high standard: to continually improve human health.

This requires a certain level of "dissatisfaction" with the status quo. After all, no matter how good the care we provide to the patients we see each day, there are still many diseases that resist our best efforts, and indeed many individuals who have difficulty accessing or affording the health services that most of us take for granted.

In North Carolina, the number of citizens without health insurance grew by 300,000 between 2000 and 2003. The increase in uninsured in our state is more than twice the national rate. Nationally, up to 45 million Americans have no health insurance, including 8 million children. Studies show that uninsured Americans delay seeking care, even when it is needed.

Advances in medical research have certainly improved the global health outlook . . . . Yet I believe that all of these important efforts and accomplishments are in some way undermined by our failure to address health disparities. It is a form of injustice that needs to be corrected.



On a global scale, it is shocking to consider that 5 billion of the world's 6 billion citizens experience a disproportionate disease burden and shortened life expectancy caused by poor environment, poor hygiene, and poor access to health care.

Advances in medical research have certainly improved the global health outlook—consider the eradication of smallpox and development of antibiotics in the last century. Scientists today are pushing toward equally spectacular accomplishments. Here at Duke, for example, talented researchers are working to develop a vaccine against AIDS, create novel treatments for heart disease, and find new ways to fight many other widespread chronic and infectious diseases.

Yet I believe that all of these important efforts and accomplishments are in some way undermined by our failure to address health disparities. It is a form of injustice that needs to be corrected.

That's why I am enormously proud of two significant events that took place here at Duke this spring: the Duke Global Health Symposium and the North Carolina Summit on Health Disparities. At the Symposium, scientists, clinicians, students, and others from across the Duke campus and beyond gathered to formally launch the Duke Global Health Institute—a university-wide effort to address local and international health disparities through focused efforts in research, education, and service. Days later, almost 600 health care leaders, policymakers, and others from across North Carolina came together at the summit sponsored by Duke Medicine to focus on addressing health disparities here in our home state.

You can read more about these important events in this issue of *DukeMed Magazine*. And we look forward to sharing with you the results of our collaborative efforts in the months and years to come. After seeing first-hand so many individuals from so many different backgrounds unite in the common cause of improving human health, I have no doubt that we can make great strides in transforming medicine into something far better than exists today.

VICTOR J. DZAU, MD
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CHANCELLOR FOR HEALTH AFFAIRS,
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DUKE UNIVERSITY HEALTH SYSTEM

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Centered

Duke's Center for Integrative Medicine gets a new home—and new attention from patients and physicians alike

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What we look like in our 75th year

Saving the smallest

Neonatologists are making big strides to help the littlest patients

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WILL MCINTYRE

from the dean

A lesson in humility

by R. Sanders Williams, MD
Dean, Duke University School of Medicine
Dean, Duke-NUS Graduate Medical School Singapore
Vice Chancellor for Academic Affairs

IN MAY 2006, OUR School of Medicine graduated its 75th class of new physicians. For those of us who guided them through the previous four years of preparation, graduation is an occasion for reflecting on our own careers to consider what parting words of wisdom may be helpful to someone just starting on the path we've long trod.

At graduation time, my thoughts often turn to my own experiences as a Duke medical student and then a young physician. Those years were full of lessons, but one in particular I've come to regard as pivotal.

The event took place late one evening during my internship, while I was making rounds on my patients. One, a woman with severe chronic obstructive lung disease, had just left the ICU after a bout of pneumonia. She had been hospitalized, requiring mechanical ventilation, several times in recent months.

After this most recent episode, she and her family had decided that if she suffered respiratory failure again, no such heroic measures would be pursued. Happily, during this hospitalization, she had improved daily and we expected to discharge her the following morning.

When I came to her bedside and asked how she was doing, she said, "I'm breathing OK, but will you sit with me for a while?" There was much to do, and as I prepared to make my excuses for why I couldn't stay, she spoke again: "Sit with me, please, because I am going to die tonight."

I protested, explaining that although she had been gravely ill, we had successfully treated her pneumonia, and our tests showed great improvement. She said, "I'm alone, and I'm afraid."

Although I felt pressured to move on, her words worried me, and evoked a good intern's predictable response: I worked her up. I checked her vital signs and examined her more carefully. I drew blood, ordered an EKG, and asked the night nurse to call me when the test results were available. Then I hurried to the ER to admit my new patient.

It was after midnight when I returned. She was awake, not seemingly in any distress. Her test results looked good, and I told her she should return home in the morning. She said, "Sit with me, and hold my hand. I'm going to die tonight."

My mind again raced to my work yet undone. This time, however, I sat. I held her hand, and I listened. I don't remember what she said, some stories of her youth and family, I believe. I probably even dozed a bit, but I didn't leave for a good while.

When the ER called again about 3 a.m., and I finally rose to finish my tasks, she was asleep—her breathing unlabored.

In the morning, before I had returned to see this patient again, my beeper went off. The nurse said that my patient had suddenly become short of breath, and within minutes had become unconscious and pulseless. Because of her Do Not Resuscitate request, no CPR was being attempted. She died before I reached her bedside.

I have thought about this patient often, questioning my actions and wondering what I overlooked. Mostly, however, I reflect on how all my technical knowledge had led me to the wrong conclusion about her prognosis, and what was needed most was simply to sit with her awhile.

I learned a lesson in humility in those few hours, and I've learned many more since. In each instance, I am reminded that the human organism has a complexity that dwarfs our still feeble efforts to understand its workings, and the great mysteries of the human spirit defy our best efforts at scientific reductionism.

So my message to new graduates, even as they take rightful pride in their accomplishments, is to be humble. For that is the way to remain open to the lessons that experience and our own patients have yet to teach us.

Beyond the glass ceiling

Why diversity at the top makes a difference

FOR ANY ORGANIZATION, Gwynn Swinson would be quite a catch. Well-educated, well-respected, and driven to make a difference, she has capably served in a series of demanding roles, including associate dean at Duke Law School, assistant attorney general of the North Carolina Department of Justice, and, most recently, cabinet secretary of Governor Mike Easley and chief administrative officer for the State of North Carolina.

She also happens to be female and African-American. Just a few decades ago, it would have been hard to find someone of either description in such senior-level positions. But when Swinson took the job of vice president for government and community affairs and external relations for Duke University Health System (DUHS) in January, she joined an executive team already notable for its diversity—in fact, she was the fifth woman and third person of color appointed by Chancellor for Health Affairs Victor J. Dzau, MD, since 2004.

"I knew of Duke's commitment to diversity going back to my days at the law school," says Swinson. "And it was clear in talking with Dr. Dzau and meeting the other members of his cabinet and the health system leadership teams that that commitment had been sustained and was growing.

"Frankly, I wouldn't have been in the interview process if I hadn't known that."

Duke University Health System's executive leadership team includes more women and minorities than ever before. Among them are: (seated, left to right) Catherine Gilliss, DNSc, dean of the School of Nursing and vice chancellor for nursing affairs, and MaryAnn Black, associate vice president for community relations; (standing, from left) Pam Sutton-Wallace, first chief of staff to the chancellor (through May 2006); Molly K. O'Neill, vice chancellor for integrated planning, vice president for business development, and chief strategic planning officer for the health system; Karen Frush, MD, chief patient safety officer for the health system; and Gwynn Swinson, vice president for government and community affairs and external relations.

"Championing diversity is not only the right thing to do ethically, it also makes sense for us as a university and health system. The people we serve and care for are diverse: we should strive to reflect that reality in our institution."

—Victor J. Dzau, MD, chancellor for health affairs

THE BUSINESS OF BALANCE

Attracting the very best candidates for leadership positions is a perfect example of what Benjamin Reese terms "the business case for diversity."

"Over the years many leading organizations have realized that embracing diversity isn't just an important ethical and moral value, it's also critical to success," says Reese, Duke's vice president for institutional equity. A growing body of research is quantifying those benefits, he adds. For example, a recent study by the Catalyst organization found that Fortune 500 companies with a higher percentage of women in senior management dramatically outperformed those with a lower percentage, yielding a 34 percent greater financial return for shareholders.

While Duke may not have stockholders, diversity does benefit its stakeholders—patients and the community, Reese says. "Making sure that different viewpoints are represented and welcomed at all levels of the institution ultimately leads to better decisions and better patient care."

Adding to longstanding efforts such as Duke's Office of Institutional Equity and Women's Initiative, Duke University Hospital (DUH) in 2004 launched a Diversity Initiative to actually build diversity-enhancing measures into its existing business structures—holding vendors to diversity standards, implementing a strategy for recruiting and retaining underrepresented groups in senior-level positions, providing diversity training, and routinely assessing cultural competency for all staff.

In 2005 the initiative was extended to the entire health system, with Diversity Leadership Groups (DLGs) formed at Durham Regional Hospital, Duke Health Raleigh Hospital, and in Ambulatory Services. The initiative is already recognized as such an innovative model that Reese and colleagues were invited to discuss the program at an American College of Healthcare Executives conference in March.

"What is significantly different about this initiative is the personal involvement and support of our leadership," says Kerry Watson, head of the DLG at Duke Hospital, who presented along with Reese. "Each of our DLGs has senior-level executives on the team who are working directly to create an inclusive environment—which is critical. Cultural transformation must occur from the top down if it's to be successful over the long term."

AT THE TABLE

"We're in a tough business and we make decisions with significant consequences every day," says Bill Fulkerson, MD, CEO of Duke Hospital, who co-chairs the Diversity Initiative with Reese. "Whether we're talking about human relations issues or addressing health care needs in our community, having people from diverse backgrounds involved in the discussion can help us better understand the various implications of the decisions we make."

Dzau shares that conviction: "As we work to create a more patient-centric organization, we must make sure that we reflect the perspectives of the diverse community we serve," he says. "Diversity brings a critical balance to everything we do."

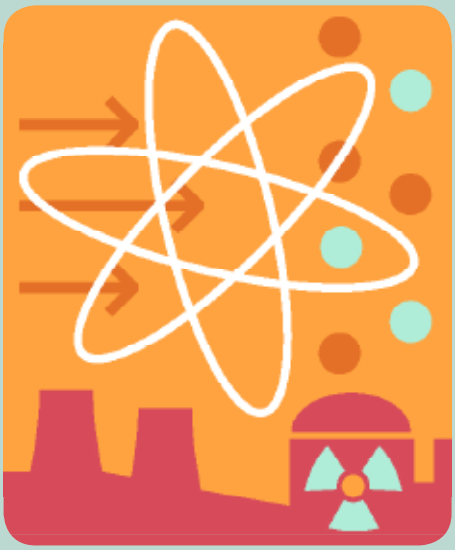
But having a diverse team at the decision-making table can't be left to chance—it takes commitment. Dzau, for one, has been known to prod search committees to seek diverse candidates, says Reese with a smile. "If the candidate pool isn't reflective of the community we serve, he'll challenge the committee to convince him that they've looked as broadly as possible to find the best talent America has to offer."

Similarly, Reese, Fulkerson, and other leaders have been working to establish formal recruitment and retention processes to increase diversity—throughout the institution and especially at senior levels. DUH now requires senior leaders to certify that qualified minority candidates have been sought for open management positions, according to Fulkerson. "We're holding ourselves accountable for this," he says.

What difference do these diverse leadership teams make? Just ask Paul Newman, executive director of the Private Diagnostic Clinic (PDC), where Martha Adams, MD, recently became the first female member of the administrative board that oversees the 1,000-member faculty practice. The board today also reflects greater racial diversity than ever before. "There is a much greater awareness of the broader social environment we work in and more focus on the needs of the diverse communities we serve as we're developing patient care programs," says Newman, who also serves on the Ambulatory Services DLG and as vice president for ambulatory care services for DUHS.

While ensuring diversity is an ongoing process, says Reese, "What you see in any organization's environment is in large part because of the messages people get from senior leaders. And in Duke's case we are fortunate that diversity is not just a mantra that's repeated—this is a place that walks the talk."

$22.25-million antiterrorism center opens



THE REAL THREAT of nuclear and radiation-based "dirty-bomb" terrorist attacks has prompted the National Institute of Allergy and Infectious Diseases (NIAID) to fund a $22.25-million radiologic antiterrorism center at Duke. The center's immediate tasks are to create a rapid and inexpensive screening test to gauge a person's exposure level and develop new drugs that treat radiation's most toxic effects.

"Significant nuclear material is missing around the world, and these materials could possibly enter the black market where they would be acquired by terrorists," says Nelson Chao, MD, director of the Duke Adult Bone Marrow Transplant Program, who will direct the multi-institution Center for Medical Countermeasures Against Radiation along with Mark Dewhirst, MD, and John Chute, MD.

"Unfortunately, very few medical products exist to counter the variety of toxicities that can result from nuclear or radiologic attacks, so we must develop a range of different products and medical approaches to protect and treat such a population."

Already underway are experiments to use human growth factor and hematopoietic (blood) stem cells to rescue bone marrow after radiation damage. The organ most severely affected by radiation exposure, bone marrow is the body's factory for blood and immune cells, so mitigating radiation effects is essential to preventing life-threatening complications, says Chao.

> "Unfortunately, very few medical products exist to counter the variety of toxicities that can result from nuclear or radiologic attacks. We must develop a range of different products and medical approaches to protect and treat such a population."
>
> —Nelson Chao, MD

Equally pressing is the need for a quick and simple method to distinguish severely injured patients from simply worried individuals following a radiologic attack, he adds. In the event of a radiation exposure, the immediate surge of patients seeking medical evaluation could easily overwhelm local medical facilities and thereby delay treatment of the sickest patients.

Currently, radiation screening requires repeated blood collections over a period of several days. As a speedier alternative, the Duke team is developing a rapid test via a laser that measures changes in the luminescence of tooth enamel following exposure to gamma radiation.

The team is also working on a blood test to pinpoint specific gene changes that accompany varying levels of radiation exposure. Developing tests that indicate the radiation dose a particular individual received is essential for properly treating exposed patients, says Chao.

Bone marrow and stem cell transplants can reconstitute damaged blood and immune systems, yet they require months of treatment and highly specialized medical expertise that isn't widely available. The Duke team will collaborate with more than a dozen academic medical centers, pharmaceutical companies and federal research laboratories to develop new drugs and therapies that reduce radiation injury and enhance bone marrow and blood cell proliferation. The discoveries they yield will not only advance preparation for a radiologic attack, but ultimately play a role in the treatment of patients undergoing stem cell transplants, therapeutic radiation for cancer, and immune recovery among patients with faulty immune systems, Chao says.

For more information, visit radccore.mc.duke.edu.

Critical mass

Summits launch global, local efforts to fight health disparities

THE CONSTELLATION OF luminaries assembled at Duke on April 17 and 18 was noteworthy by any standard: Anthony Fauci, director of the National Institute for Allergy and Infectious Diseases; Paul Farmer, founder of Partners in Health, an organization that provides health care in desperately poor areas of Haiti and Rwanda; Joep Lange, former president of the International AIDS Society; and Amartya Sen, 1998 Nobel Prize winner in economics.

More noteworthy, though, was the reason for their visit: the formal launching of the Duke Global Health Institute (GHI), a new campus-wide initiative aimed at fighting health disparities and advancing health worldwide. At the two-day symposium, internationally known visitors joined with Duke faculty and students to discuss global health challenges, share examples of successful programs already under way at Duke, and outline the vision for the GHI.

"[Our] initial goal will be to formalize and coordinate the many activities ongoing at Duke, and then to start visionary new programs to work on issues of disparity both in Durham and around the globe," said Victor J. Dzau, MD, chancellor for health affairs.

Duke President Richard H. Brodhead noted that Duke has a special aptitude for global health studies and applications not only because of its strong schools of medicine and nursing and vibrant tradition of interdisciplinary work, but because "people here have a shared passion to not only study problems, but to solve them."

A national search is under way for a leader for the GHI. But Barton Haynes, MD, who chaired the Global Health Steering Committee along with Robert Cook-Deegan, MD, painted a broad picture of its future. "It is not enough just to know. We have to do," he said, explaining that the GHI will create service sites that will also offer opportunities for research and education.

Haynes also stressed the broad nature of GHI-related scholarship. "Our goals should be subject to ongoing critique. Will we emphasize new technologies, or fair distribution of what we already have? Who will judge which populations need to be accorded priority when resources are scarce? Can injustices in the distribution of health be effectively mitigated without addressing other dimensions of social justice?

"We must integrate knowledge from the social and biological sciences with critical reflection on the humanitarian values that are motivating their efforts. This integration will be a hallmark and strength of the Duke Global Health Institute. . . . By taking advantage of the synergies between Duke Medicine and other parts of this great and ambitious university, and by applying our collective energies, [we want to] make lives better and longer around the planet."

Visit globalhealth.duke.edu for an archived Webcast of the Global Health symposium, including the keynote speech by NIAID director Anthony Fauci.

Focusing on North Carolina

Just a week after Duke's Global Health Symposium, almost 600 people from across the state gathered at the Duke-sponsored North Carolina Summit on Health Disparities to search for solutions to glaring health disparities here at home. Some 1.4 million non-elderly residents in North Carolina have no health insurance; 18 percent of Durham residents are without insurance.

N.C. Secretary of Health and Human Services Carmen Hooker Odom, U.S. Congressman David Price, and other leaders joined Chancellor for Health Affairs Victor J. Dzau, MD, in sharing perspectives at the summit. Lt. Gov. Bev Perdue, chair of the N.C. Health and Wellness Trust Fund, led a panel discussion by the CEOs of Carolinas HealthCare System, Duke University Hospital, N.C. Baptist Hospital, University Health System of Eastern Carolina; UNC Hospitals, and WakeMed Health and Hospitals focused on health care disparities action plans.

At the summit's conclusion, participants created a working group to further discuss issues identified as affecting health disparities and recommend strategies to address them.

For more information, visit communityrelations.dukehealth.org.

Summer camp for the fast-food set

S'MORES AND WEENIE ROASTS won't be on the menu at one North Carolina summer camp. Instead, kids at the week-long day camp in Bladen County will load up on fruits and veggies and spend lots of time shooting hoops, running relay races, and participating in other physical activities.

More unusually, each camper will receive clinical case management from nutritionists, physical education trainers, physicians, social workers, and occupational therapists—and their parents will be invited to take mini-workshops on healthy habits. After camp is over, their education will continue throughout the year with recipe-tasting parties and classes on low-budget, nutrient-high meals.

This health-focused take on a summer tradition is one of the first programs of Bladen HealthWatch, a new partnership between several agencies designed to fight one of the country's most entrenched health problems—obesity.

Since 2004, under the stewardship of the Fullerton Community Nutrition Network (FNN), Bladen and eight other counties in the Carolinas have been helping their citizens battle the bulge through community-wide nutrition programs that are motivating, uniting, and self-sustainable for residents in rural and low-income areas. FNN, a three-year joint venture between Duke Community Health and the University of South Carolina (USC) funded by The Fullerton Foundation, Inc., reflects a fresh new approach to fighting obesity, Duke leaders say.

"Part of The Fullerton Foundation's interest comes from their sense that physicians alone are not likely to be successful in dealing with the challenges of an increasingly overweight population," says Lloyd Michener, MD, chair of Duke's Department of Community and Family Medicine.

"We sought local leaders, since they have the knowledge and buy-in to effect change," adds Susan Yaggy, chief of Duke's Division of Community Health. "It's largely ineffective to send in the 'experts' from an academic medical center to a new community and expect folks to change their health behaviors."

While Duke and USC lend administrative support and advice to local groups, the focus has been on building local capacity and sustainable common goals rather than imposing a specific model, says Maggie Sauer, who coordinates the program for Duke.

> "Physicians alone are not likely to be successful in dealing with the challenges of an increasingly overweight population. . . . We help communities build on their own strengths and values."
>
> —Lloyd Michener, MD, chair, Department of Community and Family Medicine

The grassroots approach appears to be working. In Scotland County, for example, the newly formed Scotland County Healthy Eating Coalition worked with the faculty of College of Culinary Arts at Johnson & Wales University in Charlotte to design healthier cafeteria menus at three schools, using ingredients available through the school purchasing system. The group is also creating community gardens on shared land and working to start a county farmers' market.

"We don't come in as the medical experts with the answers, but as skilled facilitators who help communities build on their own strengths and values," says Michener. "It's clear from the programs established so far that they have a lot to offer."

For more information, contact Maggie Sauer at 919-681-3086 or sauer004@mc.duke.edu.

Multitasking—the healthy way

NEED TO MEET with the dean of nursing? These days, you may want to bring along your trainers. As one of her 2006 New Year's resolutions, Dean Catherine Gilliss decided to schedule one "walking appointment" each day. "Our faculty and staff are interested in exercise, and this is one way to incorporate it into our lives," says Gilliss, pictured here during a walking meeting with Kathy Trotter, assistant professor of nursing.

Ambulatory electronic medical records on their way

WHEN MARY SEES her family doctor for her annual checkup, she knows the doctor and nurses will refer to the familiar overstuffed manila folder that contains her medical record. It has her prescriptions, lab reports, and notes from her previous visits, including her allergic reaction to a particular type of penicillin and her family history of osteoporosis and high blood pressure.

But will her dermatologist have this information at his or her fingertips two weeks later when she goes to have a suspicious mole looked at? Or her orthopedist when she calls up next month complaining of her arthritis pain? Or the Emergency Department when the ambulance brings her in after an accident?

The answer at Duke University Health System will be yes—very soon.

The health system has launched a three-year partnership with McKesson Corporation to co-develop and deploy an ambulatory electronic medical record (AEMR) for patients seen at Duke. The AEMR will be based on McKesson's Horizon Ambulatory Care (HAC) product, but tailored to the Duke environment.

Once developed, the product will allow Duke physicians to access a patient's full medical record online no matter where that patient is being seen—a primary care doctor's office in Chapel Hill, a hospital-based outpatient clinic in Durham, a specialist's office in Raleigh, or wherever a Duke physician can access the Internet.

"This will make a huge difference for our patients," says Mike Russell, MD, associate chief information officer for the health system.

"Historically, patient's vital medical information is scattered across medical records kept by many different caregivers," he says. "This system will allow us to consolidate records, with each caregiver seeing the entire picture, rather than just their own corner. We believe a good ambulatory electronic medical record will improve patient safety, improve the continuity of care between inpatient and outpatient settings, improve patient satisfaction, and allow us to see trends across large populations so that we can improve care system-wide."

The system will debut in general pediatrics in 2006; e-prescribing will be introduced in all ambulatory settings in the next 18 months, and the chart and orders/results modules will be available to all Duke physicians by 2009.

Construction zone

A look at what's going on—and going up—around the Medical Center campus

RESEARCH BUILDINGS

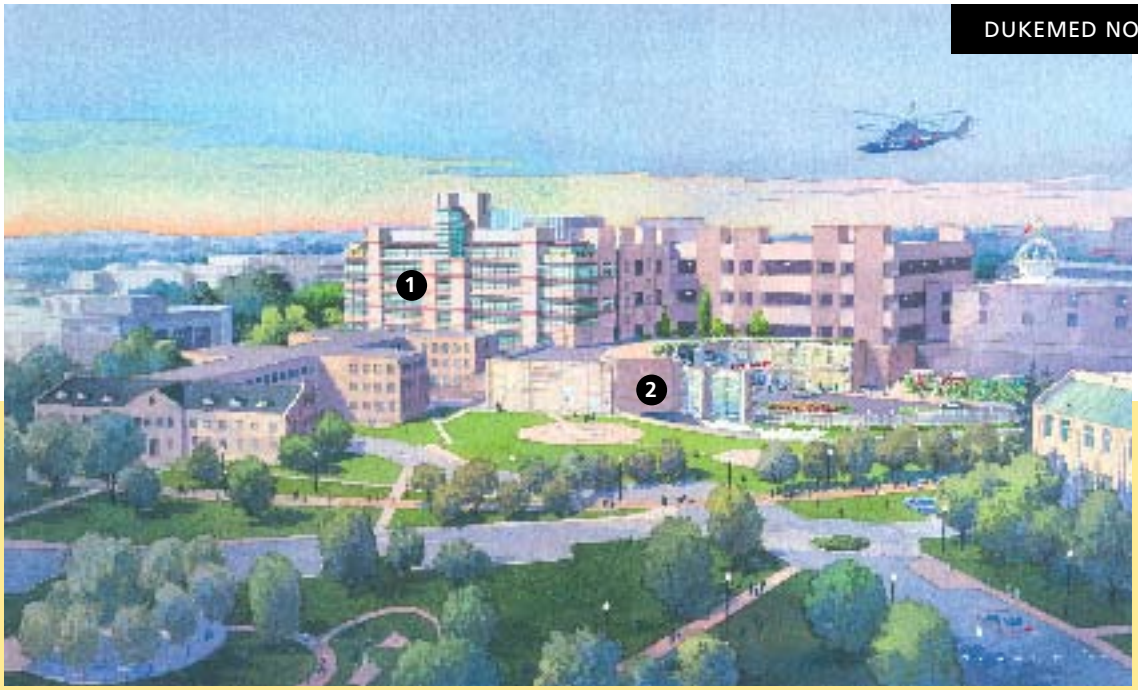
Two research buildings are nearing completion on Research Drive. **The Medical Science Research Building II (MSRB II)** (right), a five-story, 165,000-square-foot research space, will be finished this summer. The building's occupants will include researchers from the Duke Comprehensive Cancer Center, Department of Surgery, Department of Medicine, and Center for AIDS/HIV Vaccine Immunology.

Tucked in beside MSRB II is the one-story **Global Health Research Building (GHRB)**. This building will house research for the Southeast Regional Center of Excellence for Emerging Infections and Biodefense (SERCEB), led by Barton Haynes, MD. It should be completed by August 2006.

Renderings courtesy of Duke University's Office of the Medical Center Architect

SCHOOL OF NURSING BUILDING

The 60,000-square-foot, three-story **School of Nursing** building should be completed by August 2006. The building will include an 80-seat classroom, a 150-seat auditorium, a café and eating area, skills labs, a computer lab, faculty offices, and workspace for researchers and PhD students.



PROPOSED HOSPITAL ADDITION 1

Duke University Health System is awaiting final approval from the state for a $73.7-million dollar addition to the current Duke Hospital building that would dramatically improve surgical capacity. The project includes an **eight-story addition to the south side of the hospital**, filling in space between the hospital and the Bell Building. The additional space will provide room for administrative offices currently housed on the third floor of the hospital. Once those offices have moved, the third floor of the hospital will be renovated to better accommodate pre-op holding and post-anesthesia care units and family waiting areas, and add 11 new, larger operating rooms. If approved, construction could begin as early as this summer, with completion by 2011.

EMERGENCY DEPARTMENT CONSTRUCTION 2

Duke Hospital's **Emergency Department** (ED) construction will provide almost twice as much space as is currently used. When the project is completed in 2007, it will include a new entry drive and ambulance bay, an addition of 25,000 square feet for an entrance lobby, adult and pediatric patient rooms, triage and resuscitation rooms, and the renovation of 25,000 square feet of existing ED space to provide additional patient rooms, support spaces, and a transfusion lab. As part of the ED renovation, the helicopter landing pad will be moved to Duke Hospital's roof by fall 2006.

INTEGRATIVE MEDICINE FACILITY

The new Duke Center for Integrative Medicine building (left), located on the Center for Living Campus on Morreene Road, is scheduled to be completed this fall (see page 42 for more details).

RALEIGH CONSTRUCTION

A new medical office building at Duke Health Raleigh Hospital will be completed early this summer.

"What you create will last"

Duke Nursing celebrates 75 years

IN 1924, when James B. Duke bequeathed $4 million of his fortune to Duke University, he specifically stated that some of it be used for "erecting and equipping at Duke University . . . a Medical School, Hospital, and Nurses Home."

It only took a few years for Duke's dream to become a reality. Duke University Hospital (DUH) opened in July 1930, the School of Medicine began classes in October of the same year, and on January 2, 1931, 24 high school graduates began classes at the School of Nursing—even before the "Nurses Home" was completed.

For 75 years, Duke Nursing has remained on the forefront of nursing education, practice, and research. Hettie Lou Garland, who graduated in 1965 from Duke University School of Nursing (DUSON), has her own way of noting the quality of nursing education and practice at Duke.

"A good friend of mine says to me one time, 'God grant me a thinking nurse, and God save me from one who can't,'" she says. "Duke prepares nurses who think."

STARTING FROM SCRATCH

James B. Duke wasn't alone in understanding the vital role of nursing. It was so important to Wilburt C. Davison, MD, first dean of the School of Medicine, that he began looking for a chief nurse before he had hired all of the department chairs for the new medical school.

"The chief nurse is the most important person in any hospital, and enquiries for candidates were made throughout the country," wrote Davison in his account of the early years of Duke.

He found the right person in Bessie Baker, RN, who served as dean of the School of Nursing and head of Nursing Services at DUH from 1930 to 1938, when she retired because of ill health. (In 1943, a year after her death, Duke nurses and physicians voted to rename the nurses' home "Baker House" in her honor.)

Starting a nursing school and hospital from scratch was exciting for those involved. "It was instilled in us: 'You're starting a school, and what you create will last,'" reported Rosie Wehunt Hampton, of the class of 1936, when she was interviewed for the 65th anniversary of the school.

And despite many changes Duke Nursing has not only lasted, but thrived. (See timeline below for a brief look at some of the milestones of Duke Nursing.)

A MATTER OF DEGREES

The first DUSON students received a diploma after completing a three-year program that cost $100 per year. In 1938, the school began offering baccalaureate degrees to students who had completed two years of college along with the nursing curricula. In 1944, the school began a Bachelor of Science in Nursing Education. In 1953, it added a Bachelor of Science in Nursing (BSN) degree. Five years later, under the leadership of Thelma Ingles, MA, RN, with assistance from Ruby Wilson, EdD, RN, FAAN, who would later serve as dean, the school began a clinical nursing specialist program, the first master's program of its kind in the United States.

Selected milestones in Duke Nursing

For a complete timeline, visit nursing.duke.edu.

1929

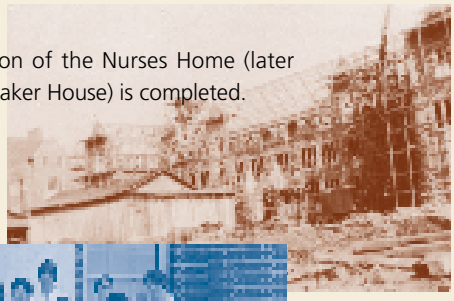
School of Medicine Dean Wilburt C. Davison recruits Bessie Baker as the first dean of the School of Nursing and head of nursing at Duke University Hospital.

1931

24 students begin classes at the School of Nursing. (They were the only class to wear black stockings.)

1932

Construction of the Nurses Home (later renamed Baker House) is completed.



The school stopped offering the BSN degree program in the 1980s, concentrating instead on the Master of Science in Nursing (MSN) degree, post-master's certificates, and joint degree programs. But in 2002, the school once again began offering a BSN degree—this time as an accelerated, 16-month program designed for students who have already completed a college degree. In fall 2006, the school will accept the first students into its new PhD program.

In all of these programs, practical nursing service—usually at Duke Hospital—has been an integral part of the nurses' education.

"The School of Nursing has a rich history in preparation of generalist and advanced practice nurses," says Mary Ann Fuchs, MSN, RN, chief nursing and patient care services officer for DUH and Duke University Health System. "These individuals learn in our hospital and clinic settings. Most become health system employees or care providers in other organizations across the state. In some way, shape, or form, they touch citizens across North Carolina."

"We will continue our tradition of educating the brightest people interested in careers in nursing. But we have layered into this school a commitment to improve patient care through research and a greater commitment to direct participation in nursing practice."

—Dean Catherine L. Gilliss, DNSc, RN, FAAN

THE NEXT 25 YEARS

Nursing education lost some steam in the 1980s when the university decided to close the bachelor's program and focus on graduate level nursing. "When Duke closed the undergraduate program it alienated many of our alumnae," says current dean and vice chancellor for nursing affairs Catherine Gilliss, DNSc, RN, FAAN, herself an alumna of the school. "But under my predecessor, Dean Mary Champagne [who served from 1991 to 2004], the school truly flourished.

"We have a strong platform from which to build our future," she adds. "We are recruiting excellent faculty; our National Institutes of Health funding has risen over the past few years [from 32nd in the nation in 2002 to 23rd in 2005]. We have graduated three groups of students from our new accelerated BSN program and are now looking forward to our PhD program. And when our new building is completed this summer, we will once again be under one roof," she says. (See page 10 for details.)

And for the next quarter-century? "We will continue our tradition of educating the brightest people interested in careers in nursing," Gilliss says. "But we have layered into this school a commitment to improve patient care through research and a greater commitment to direct participation in nursing practice. We have rediscovered the energy and possibility that comes from reconnecting to Duke University and the health system through collaborative work on issues such as global health and improving care through nursing research."

1940s

During World War II, Duke School of Nursing is chosen by the U.S. Public Health Service to train cadet nurse corps. Many Duke Hospital nurses served in the 65th General Hospital in England.

1970

Wilma Minniear, a former associate professor in the School of Nursing, becomes Duke Hospital's first executive director of nursing services. She later establishes the first quality assurance program in nursing in the U.S.

1992

The School of Nursing begins the first Master's Geriatric Nurse Practitioner Program in N.C. Other nurse practitioner programs soon follow.

2006

Duke Nursing celebrates 75 years. Pictured at the kick-off celebration are (from left): Duke President Richard H. Brodhead, Dorothy Brundage (interim dean from 1987-91), Dean Gilliss, DUHS Chief Nursing Officer Mary Ann Fuchs, Mary Champagne (dean from 1991-2004), Ruby Wilson (dean from 1971-84), and Chancellor for Health Affairs Victor J. Dzau.

Healing the heart may help headaches

CLOSING A COMMON opening in the heart called patent foramen ovale (PFO) not only lowers the risk of stroke, it seems to reduce migraines. Researchers now plan to test this phenomenon with a multicenter clinical trial of PFO closure for migraines called ESCAPE: Effect of Septal Closure of Atrial PFO on Events of Migraine with Premere.

About 25 percent of the population has this hole in the heart, and most experience no symptoms. However, studies show the chance of having a PFO is as high as 50 percent for people who suffer from migraines.

The opening, in the upper chambers of the heart between the left atrium and the right atrium, is present during regular fetal development and normally closes soon after birth.

In people with PFO, the flap of tissue between the left atrium and right atrium doesn't seal properly. Exercise, coughing, or stress can push open the flap, allowing unfiltered venous blood to shunt into the left atrium and travel to the brain. Researchers suspect that chemicals or tiny blood clots in the venous blood may trigger migraines. Doctors treating stroke through PFO closure first noted its effect on migraines—their patients reported fewer migraines after the procedure. PFO raises the risk of ischemic stroke in people under 55; closing the PFO in stroke victims reduces the likelihood of a second stroke, according to several studies.

Several clinical trials are now under way to determine if PFO closure can successfully treat migraines. The results of the first small clinical trial were presented in March during the 55th Annual Scientific Sessions of the American College of Cardiology in Atlanta. The study of 147 British patients found a 37 percent reduction in the length and frequency of migraines, compared with a 17 percent reduction in the placebo group. The study participants reported at least a 50 percent decline in the number of days they had headaches. However, the procedure did not prevent migraines altogether.

"These data are interesting, but further studies to answer the question definitively are crucial since many patients showed improvement," says Duke cardiologist John Rhodes, MD, an expert in pediatric and adult congenital cardiac catheterization.

Duke is one of 10 implant sites in the U.S. for the randomized, double-blinded ESCAPE study. The trial will enroll 500 patients with PFO who have failed to find relief through preventive migraine medications.

About 25 percent of the population has this hole in the heart, and most experience no symptoms. However, studies show the chance of having patent foramen ovale (PFO) is as high as 50 percent for people who suffer from migraines.

The closure device is implanted during a routine cardiac catheterization procedure. All participants will proceed to the catheterization laboratory and be placed under anesthesia. Some will have the PFO closed with the Premere device; the placebo group will have a sham procedure with only a catheter incision in the groin.

Rhodes likens the procedure to sealing a trap door with two anchors attached by a string. "We place the first anchor in the left atrium, pull the trap door closed, and then release the second anchor in the right atrium—after which the PFO is closed," he says. Rhodes carried out the national multicenter trial's first PFO closure on April 7 on a female patient from northern Virginia. This was the first patient with migraines to undergo PFO closure in a U.S. trial.

The trial sponsor is St. Jude Medical, which manufactures the Premere septal closure device for sealing PFOs. There is a potentially large market for the closure devices—perhaps 1.5 million migraineurs could qualify for the procedure. Approximately 28 million Americans suffer from migraines.

For more information, visit the ESCAPE trial Web site at escapemigraine.com.

The cutting edge of hip replacement

A PROFESSIONAL BACK-UP singer takes a gig less than three weeks after her surgery. A retired university chancellor goes hunting 22 days after his operation. These stories of rapid postoperative recovery are not particularly notable in these days of minimally invasive surgery. But after a total hip replacement? It's nothing short of remarkable, says Duke orthopedic surgeon Scott Kelley, MD, about the results he's seen after employing a new muscle-sparing total hip replacement (THR) technique.

> Patients often go home after two days and walk unassisted after two weeks.

Discussions at a surgical meeting last year piqued Kelley's interest in the new anterolateral approach developed by German orthopedic surgeon Heinz Röttinger, MD (currently most surgeons use a posterior approach). Röttinger adapted a procedure from the 1930s and devised a modified split surgical table that accommodates the correct leg position during the operation. Kelley met with Röttinger at the meeting, took two field trips to observe the procedure, then practiced in a cadaver surgical lab before offering it to patients. The results from 50-plus procedures—and the kudos from his patients—have convinced Kelley that this is the way to go.

During muscle-sparing THR, the surgeon obtains access to the hip joint by passing between the abductors and the tensor fascia lata, instead of cutting through muscle as with traditional approaches. Less muscle damage means less pain, less blood loss, and faster recovery.

Patients who underwent the new technique after conventional THR on the opposite leg were amazed when their recovery time went from months to weeks, Kelley notes. Patients are often on their feet the day of their surgery, go home after two days, and walk without assistance after two weeks. "Also, there are no precautions, allowing patients to immediately cross their legs and sleep in any position that's comfortable," Kelley adds. "People can sit however they want and reach down to tie their shoes."

To aid in preoperative planning, the surgical team employs digital templating—a technology which superimposes an image of the prosthetic over a digital x-ray of the pelvis. To guide patients through the experience, the team developed an educational DVD that explains all aspects of their care and offers tips on preparing the home to accommodate the patient.

Other Duke orthopedic surgeons are performing other cutting-edge hip replacement techniques, Kelley adds. "We have a very strong hip program."

And, patients would concur, some very strong hips.

Tiny trial therapy

DUKE PULMONARY specialists are testing an experimental implantable valve designed to improve lung function in emphysema patients. The so-called intrabronchial valve (IBV) limits airflow to selected parts of the lung while allowing the normal clearance mechanisms of secretions to occur.

Using an endoscope, "We place the IBV in the bronchial tubes of the most damaged parts of the lungs," says Momen Wahidi, MD, director of the Interventional Pulmonology Program at Duke, who is leading the study along with co-investigator Thomas D'Amico, MD. "This allows the more effective parts of the lung to have more space—replicating what lung volume reduction surgery would do but in a less invasive way."

If the IBV proves effective in clinical trials, it could alleviate the shortness of breath and improve the quality of life for many of the 16 to 30 million U.S. citizens with emphysema, says Wahidi.

Since the IBV is implanted endoscopically, patients can be discharged within 24 to 48 hours, Wahidi says. Another advantage is that the device can be removed if no benefits are obtained or complications arise, he adds.

Duke is one of 10 sites around the country enrolling patients in this study and the only site in North Carolina. To be eligible, patients must have moderate to severe emphysema and must have abstained from smoking for at least six months.

This experimental valve may help patients with emphysema breathe easier.

For more information, contact Linda Brown, study coordinator, at 919-668-3380.

Killing two birds—psoriasis and depression

A DRUG APPROVED for treating rheumatoid arthritis not only effectively reduces the physical symptoms of psoriasis but also the depression and fatigue patients often experience, according to Duke researchers involved in a multi-site study of etanercept (Enbrel). The drug is an antibody that blocks the pro-inflammatory cytokine tumor necrosis factor-alpha, high concentrations of which have been associated with depression. Until now, however, no research team has examined this relationship in humans.

The primary objective of the clinical trial was to find out if etanercept would improve the clinical symptoms of psoriasis.

In severe cases, people with psoriasis can experience joint pain similar to that of rheumatoid arthritis as well as depression and fatigue.

The researchers found that nearly half (47 percent) of subjects taking etanercept achieved 75 percent or greater improvement in their clinical symptoms of psoriasis at week 12, compared to 5 percent of those on placebo. In addition, researchers found significant improvements in the etanercept group as measured by two commonly used rating scales for depression. The etanercept group also showed lower levels of fatigue, which strongly correlated with improvements in joint and skin pain.

The results appeared in the December 14, 2005 online *Lancet*.

Nearly half of subjects taking etanercept achieved 75 percent or greater improvement in their clinical symptoms of psoriasis at week 12, compared to 5 percent of those on placebo. They also had lower levels of fatigue and depression.

Repairing leaky valves

DUKE CARDIOLOGISTS and cardiac surgeons are enrolling patients with leaky mitral valves in a clinical study evaluating a new catheter-based approach for mitral regurgitation (MR), a condition in which blood flows back toward the lungs with each heartbeat.

The researchers said should the new system be proven safe and effective in clinical studies, it could give cardiologists a new, less invasive option for mitral valve repair. Duke is one of more than two dozen other North American medical centers participating in the Phase II clinical study comparing the safety and effectiveness of the new approach to standard open heart surgery. An earlier Phase I feasibility study found that the procedure had a very low rate of adverse events or complications. The MitraClip device reduced MR at hospital discharge to ≤1+ in the majority of patients (MR severity is rated on a scale from Grade 1, mild, to Grade 4, severe).

To enroll a patient or for more information, contact Dana Glisson at 919-681-3810 or dana.glisson@duke.edu.

Move over, mammograms

DUKE SCIENTISTS have created a new breast scanner that will dramatically improve their ability to visualize small tumors while also reducing radiation exposure to one-tenth that of normal mammograms. Moreover, the new device does not compress the breast, as do traditional mammograms.

The new scanner uses computed tomography (CT) with a unique variation: it provides a three-dimensional image of the breast. The new scanner rotates around the breast to obtain a complete image, from the nipple to the chest wall. Traditional mammograms provide only a two-dimensional image and they compress the breast, thereby distorting the image and causing discomfort for many women.

The Duke scientists have successfully demonstrated that their new CT scanner can detect lesions as small as five millimeters in artificial breast models and in cadavers. Mammograms are considered able to detect soft tissue lesions around one centimeter in diameter—about the size of a marble—although they can detect far smaller micro-calcifications, which could be indicators of disease.

The Duke team plans to begin testing in women within two years and is in the process of developing a start-up company to commercialize the device.

ER drug dosing often inaccurate

WHEN PATIENTS come to emergency rooms with symptoms of heart attack, they may be getting more than they bargained for.

A new analysis by Duke Clinical Research Institute (DCRI) cardiologists has found that because of inaccuracies in prescribing, 42 percent of patients rushed to emergency rooms with symptoms of a heart attack received inaccurate doses of powerful drugs intended to stop clotting in coronary arteries.

42 percent of patients rushed to emergency rooms with symptoms of a heart attack received inaccurate doses of powerful anti-clotting drugs.

While numerous clinical trials have proven that these drugs can save lives, correct dosing is crucial, the researchers say, since the therapeutic window is narrow. Too much of the drug can lead to bleeding episodes, while too little may be ineffective at stopping the clotting process.

"These drugs are clearly beneficial, and when dosed correctly are also safe," says Duke cardiologist Karen Alexander, MD, lead investigator of the study published in the December 28, 2005, *Journal of the American Medical Association*.

The Duke researchers believe that when evaluating these patients in emergency rooms, physicians should spend a little more time clarifying information necessary for accurate dosing, such as weight and kidney function. The researchers also hope that the results of their analysis provide concrete steps to improve safety, thereby increasing physician confidence in using these drugs on high-risk patients, who have the most to gain.

Say, what's your PSA?

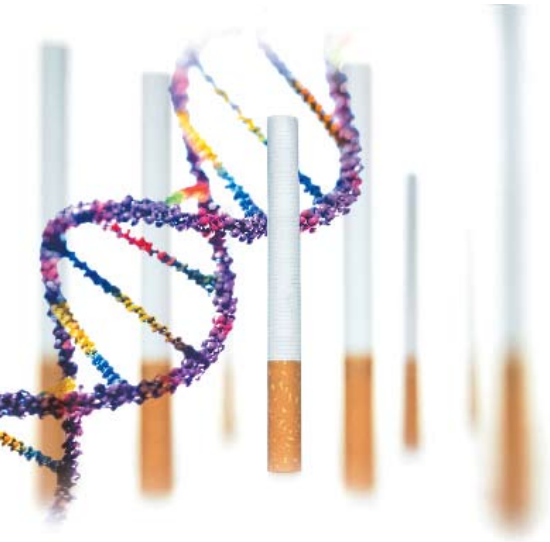
THE DIAGNOSTIC criterion currently used to indicate prostate cancer in all men needs to be age-adjusted to more effectively detect the cancer in younger men, Duke researchers have found. The researchers found that the criterion—how fast the level of the telltale protein prostate specific antigen (PSA) is rising—needs to be set at a lower threshold for men under age 70.

The current threshold for the rate of increase, known as PSA velocity (PSAV), is 0.75 ng/ml/yr, meaning if a man's PSA level rises more than 0.75 in one year, he should consider a biopsy for prostate cancer. In their study of the medical records of nearly 12,000 men, the researchers, led by Judd Moul, MD, found that using that PSAV criterion for younger men prevented physicians from detecting possible prostate cancers in those men.

To have an accurate picture of their PSA levels over time, men should have a baseline test done at age 40, especially if they are at greater risk for developing the disease, Moul says. Those at greater risk include African-American men and those with a family history of prostate cancer. Those at average risk—Caucasian men and those with no family history—should have a baseline test at 45. If the baseline PSA value is 1.5 ng/ml or less, a man need only be screened every five years. A value greater than 1.5 ng/ml warrants an annual screening.

Time to weigh the options

In another recent study at the Duke Prostate Center, researchers found that waiting up to 180 days to treat low-risk prostate cancer poses little or no threat of disease progression. The multi-university study, published in the March 2006 *Journal of Urology*, should reassure men that they can take time to choose the best treatment option for them, researchers say.



Macular degeneration: Finding a smoking gun

AN INTERACTION BETWEEN cigarette smoking and a susceptibility gene greatly increases the risk of developing all forms of age-related macular degeneration (AMD), researchers at Duke and Vanderbilt University Medical Center have found.

The combination of these factors accounts for as many as one-third of the cases of AMD. The study, published in the May 2006 *American Journal of Human Genetics*, represents one of the first examples of an interaction between genetic and environmental factors in the development of a common disease.

The new study of the gene, called LOC387715, represents discovery of the second major susceptibility gene for AMD. An earlier study by this group and others identified the first major genetic risk factor for the disease, a gene called complement factor H (CFH). CFH is believed to play a role in the regulation of the immune system.

A second research group at the Duke Eye Center has found that, in an animal model, cigarette smoke and its component tar trigger the formation of deposits and thickening in the retina that cause AMD. In addition, the combination of the three oxidant "hits"—smoke, UV light, and a high-fat diet—exacerbated the effects of smoking on AMD. This study, published in the February 2006 *Investigative Ophthalmology & Visual Science*, is the first to examine the mechanism by which smoking causes macular degeneration.

A completely new way to treat asthma

PULMONARY SPECIALISTS FROM the United States, Canada, Brazil, Australia, and the United Kingdom are testing a new non-pharmacological strategy for treating difficult cases of asthma by delivering thermal energy to the airway walls to reduce the presence of airway smooth muscle, the tissue responsible for causing the disease's symptoms.

If the effectiveness of this minimally invasive approach is borne out by clinical trials, Duke pulmonologist Monica Kraft, MD, says it could mark a paradigm shift in how asthma patients are treated, in that physicians will now have a procedure-based therapy for the disease.

"While there are many underlying causes, or triggers, for asthma, the end result is inflammation of the airways and smooth muscle contraction leading to airway constriction," says Kraft, director of the Duke Asthma, Allergy, and Airway Center. "This process leads to the hallmark symptoms of asthma—shortness of breath, wheezing, and coughing."

In the new treatment, physicians insert a flexible bronchoscope either through the nose or the mouth. The scope is then threaded to the target airway, where thermal energy is deployed, heating the smooth muscle tissue at the specific site for 10 seconds. Physicians then move the scope farther down the airway and deliver therapy again, until the length of the airway has been treated.

For the multicenter trial, physicians will treat about one-third of the airways at each visit. Each treatment session takes about one hour, followed by a four-hour observation period. Patients in the control group will have the bronchoscope inserted, but the thermal energy will not be applied.

Researchers plan to enroll more than 300 patients between the age of 18 and 65 with severe asthma whose symptoms cannot be controlled by conventional therapies.

"We plan to follow patients for at least one year, and while the procedure will not cure asthma, we hope that it will improve patients' quality of life," Kraft says.

For more information about the Asthma Intervention Research 2 Trial (AIR2), please contact Denise Beaver at 919-660-6776 or beave006@mc.duke.edu.

Flying in the face of heart disease

THE COMMON FRUIT fly, that staple of high-school science experiments, could greatly accelerate the search for genetic causes of heart disease finding by serving as a powerful new model for testing human genes, Duke researchers have discovered.

"The difficulty in performing studies to find specific genes that cause disease in humans is that you need large families with members afflicted with the disease," says Duke cardiology fellow Matthew J. Wolf, MD, PhD, first author of a paper about the research published January 23, 2006, in the early online edition of the *Proceedings of the National Academy of Sciences*. "This can be a quite a complex and laborious undertaking.

"However, fruit flies, with their well-documented genome and rapid life cycle, have the potential to greatly speed the process of finding and verifying candidate human genes for heart disease. In our experiments, we were able to demonstrate for the first time that a mutated gene that causes a specific heart disease in a human causes the same disease in the fruit fly."

The team's bioengineers adapted an existing imaging technology to visualize in detail for the first time the beating of the heart of a fruit fly, an insect the size of a grain of rice.

> "In our experiments, we were able to demonstrate for the first time that a mutated gene that causes a specific heart disease in a human causes the same disease in the fruit fly."
>
> —Matthew J. Wolf, MD, PhD

After perfecting the new visualization technique, the researchers inserted into the fly genome a mutated gene that causes the heart muscle to enlarge and be unable to pump blood efficiently. The moving images revealed that the fly heart looked and acted just like a human heart with the same condition.

In addition to enabling researchers to systematically screen genes to identify potential gene mutations or variants implicated in human heart disease, the achievement also raises the possibility of rapid screening in fruit flies of drugs to treat heart disease, researchers say.

In recognition of his research, the American Heart Association bestowed upon Wolf its prestigious Louis N. and Arnold M. Katz Basic Research Prize in November.

Tiny hearts: Matthew Wolf holds a petri dish containing immobilized fruit flies whose hearts he is studying.

How to make a fly sit still

Matthew Wolf's field of research is genetics, but for his latest study, the first question was how to make a fruit fly stay still enough to get an image of its beating heart.

"I spent quite a bit of time peering at [the flies] under a microscope to figure out how to immobilize them without harming them," he says. "While I was studying them, my wife happened to take me into a craft store. I found some clear soft gel candlewax that you can melt and pour into molds, and I thought it might be worth a try. I took some home and melted it in an old frying pan I have from my bachelor days. When I poured it into petri dishes and let it cool, it created a sticky gel with a level surface."

Wolf brought his findings from the kitchen to the lab bench. He anesthetizes fruit flies with carbon dioxide. Then, watching through a microscope, he uses fine forceps to position the knocked-out flies into small slits in the gel.

"When they come to, their feet, mid-body, and wings are stuck to the gel," says Wolf. "That keeps them still enough that I can do an echo of their heart."

Duke Medicine
A PORTRAIT

On the occasion of the 75th anniversary of medicine at Duke, we commissioned a special collection of photographs to capture the spirit of Duke Medicine today. As this institution now comprises some 20,000 faculty and staff and hundreds of students engaged in all manner of medical research, education, and patient care, the assignment was admittedly no easy task.

Still, to "essay" is to try, and what better means than a photo essay to convey some part of the essence of this institution? Here, then, are moments captured over the course of a few weeks in the life of this place—snapshots of just some of the daily intersections of triumph and frustration, risk and reward, the mundane and the momentous, that arise when determined people take on a mission as monumental as healing.

PHOTOGRAPHY: WILL & DENI McINTYRE

> WEDNESDAY :: 11:42 AM

Progress

Interventional cardiology fellow Kanwar Singh, MD, prepares for a procedure in Duke's Cardiac Catheterization Lab, where physicians inspect the inner workings of the heart. Some 6,500 cardiac catheterizations are performed at Duke annually, with another 900 taking place in the mobile cath labs Duke trucks to smaller communities across North Carolina.

"Duke is a very different kind of place than its peer institutions. It's youthful, it's nimble. Someone may say 'Gee, we've never done that before,' but the next sentence will be 'So what do we have to do to figure out if this will work?' There's no idea here that something can't be done."

—Huntington Willard, PhD, director, Duke Institute for Genome Sciences & Policy

Discovery

> THURSDAY :: 11:20 AM

Margaret Pericak-Vance, PhD, director of the Duke Center for Human Genetics, talks with team members in a research lab at the Ralph Snyderman Building. Discoverer of the first major genetic risk factor for Alzheimer's disease, Pericak-Vance is now leading efforts to untangle causes of common disorders ranging from autism to multiple sclerosis.

"We'd like for Durham to not only be the City of Medicine but also to become the Community of Health."

—MaryAnn Black, associate vice president for community relations

> THURSDAY :: 6:13 PM

Duke dietitian Andrea Leach conducts a Diabetes Care Group cooking class at the Hayti Heritage Center in downtown Durham. The class is a program of Durham Community Health Network, a state-funded partnership between Duke and local government agencies that provides home- and neighborhood-based care management to more than 17,000 patients.

Community

Family

> TUESDAY :: 11:07 AM

Dennis Clements, MD, cuddles Selden Schiff during her well-baby checkup at Duke's Pickett Road Clinic. Located in south Durham, the practice is part of Duke's growing network of community-based primary and specialty care clinics throughout North Carolina and southern Virginia.

"I will continue to preach the wisdom and rightness of putting the patient at the center of every action we take and every decision we make."

—Victor J. Dzau, MD, chancellor for health affairs

> TUESDAY :: 2:19 PM

Connected

Joanne Kurtzberg, MD, director of the Duke Pediatric Blood and Marrow Transplantation Program, sees patient Isaiah Bingham for his six-month follow-up appointment. In 1993 Kurtzberg pioneered umbilical cord blood transplants from unrelated donors to treat children with cancers and rare genetic disorders; since then her team has performed more of the lifesaving procedures than any other center in the world.

"The balance between theory and practice has been struck in a somewhat different way at Duke . . . . [Our work forms] an arc that extends from inquiry through discovery to translation into practice, a continuum that links the most abstruse research with practical improvements to actual lives."

—Richard H. Brodhead, PhD, president, Duke University

> WEDNESDAY :: 2:17 PM

Thomas P. Vail, MD, director of adult reconstructive surgery and of the Total Joint Replacement Center at Duke, reviews an x-ray with patient Ruby Wilson, EdD, RN, who served as dean of the Duke University School of Nursing from 1971 to 1984.

"Great institutions succeed by evolving while remaining true to their core principles. If that is our charge, and with our knowledge of our heritage, then our future is bright."

—Edward R. Halperin, MD, vice dean, Duke University School of Medicine

Foundations

"At Duke, we believe that the partnership between the educational programs and the care delivery systems are fundamental to the enrichment of each and, ultimately, to providing the best patient care."

—Catherine Gilliss, DNSc, RN, FAAN, dean, School of Nursing and vice chancellor for nursing affairs

> MONDAY :: 12:24 PM

Nurse practitioner Anne Derouin walks with student Johnturra Morrell, one of the hundreds of students she serves in the Southern High School Wellness Center. Operated by Duke's Department of Community and Family Medicine in partnership with Durham Public Schools, the clinic is one of four Duke-run school-based clinics designed to keep Durham public school students healthy and in school, regardless of their ability to pay. "I love them," says student Precious Walker of the center's staff. "They treat me like family."

SERVICE

Education

> TUESDAY :: 9:50 AM

R. Sanders Williams, MD, dean of the Duke University School of Medicine, walks with medical students Chris DeRienzo and Sunny Mei-Chun Wang on West Campus. In August 2005 Williams also became the founding dean of the Duke-NUS Graduate Medical School Singapore, a new school based on the Duke model designed to produce the next generation of physician-scientists in Asia.

"Other schools graduate excellent physicians. Duke graduates excellent physicians *plus*. The third year of independent scholarship gives our students time to develop an extra dimension, whether it's pursuing basic research or studying medical ethics or starting a biotech company. That's why they become leaders—people who make a real impact."

—R. Sanders Williams, MD, dean, Duke University School of Medicine

{Internal}

AFFAIRS

Advances in fighting colorectal cancers—
one of the most common
(and commonly ignored) cancer types

BY DENNIS MEREDITH

Kirk Ludwig's operating room is bathed in twilight, rather than lit by the brilliant surgical lamp expected in such an arena. His voice is similarly subdued as he issues quiet, precise orders to the resident and nurses who aid him. And rather than poring over a large incision in their patient, they scrutinize video screens suspended above them as they carry out their delicate manipulations.

Those screens show where the real surgical action is—within the patient's abdomen, where a well-lit laparoscopic camera captures an image of shifting, glistening coils of pinkish intestines. As with usual laparoscopic procedures, the surgeons had inserted the camera's thin tube through a small incision in the patient's abdomen. And through another incision, they introduce any of a suite of laparoscopic instruments—ranging from a simple scissors to a sophisticated "bipolar cautery" that simultaneously cuts and coagulates vessels.

> "If people follow screening guidelines, polyps can be removed before they become cancerous. Unfortunately, more than half of the at-risk population is not screened.
>
> —KIRK LUDWIG, MD

But surprisingly, another essential instrument appears in the camera's view—the deft hand of a surgeon. Ludwig has reached through a rubber cuff in yet a third small incision, using his gloved fingers to manipulate the bulky intestines into position. This "hand-assist" enables him to more efficiently find and excise such targets as the gnarled, black tissue of a colon tumor.

A ONE-TWO-THREE PUNCH

Ludwig's expertise at hand-assisted laparoscopic surgery exemplifies Duke's approach to successfully treating colorectal cancers—combining the best of technology with experienced skill honed over hundreds of surgeries. Like most of his fellow colorectal surgeons, in fact, Ludwig has carried out hundreds of operations more than he would have liked. "Colon cancer is, in most instances, an avoidable disease. If people follow screening guidelines, polyps can be removed before they become cancerous," he says. "Unfortunately, more than half of the at-risk population is not screened." As a result, colorectal cancers have become the nation's second-leading cause of cancer death, even though they are highly curable when caught early.

The good news for those with more advanced cancers is that treatment is getting better all the time. At Duke, Ludwig

and his fellow surgeons are collaborators in a "triple threat" approach to treating colorectal cancers, working closely with colleagues expert in chemotherapy and radiation therapy to strategize an optimal treatment for each patient.

Of the surgical component, Ludwig says that "Laparoscopic colon surgery is pretty high in technical difficulty, and most people believe it takes perhaps a hundred operations or more to become proficient with the techniques. The difficulty arises because the operations are conducted in more than one quadrant of the abdominal cavity, and also that the major blood vessels to be sealed are buried in thick, fatty mesentery. So there's always the possibility of major bleeding." At the end of the operation, of course, the surgeon must also ensure that the complex arrangement of the colon is restored properly.

> "Our patients have shorter hospital stays, less pain, and a better cosmetic result as a bonus to the success in treating the cancer.
>
> —KIRK LUDWIG, MD

Hand-assisted techniques have literally brought a surgeon's touch to bear to produce more effective outcomes, he says. "The colon is a very big, heavy organ with a lot of complex anatomy, and using the traditional laparoscopic techniques means moving the tissue around using only small instruments. The hand-assisted techniques have really allowed us to do these operations in a much more efficient way."

What's more, he says, hand-assist enables the surgeries to be done as quickly as traditional open abdominal surgeries, and yet retain the advantages of laparoscopic techniques. "Our patients have shorter hospital stays, less pain, and a better cosmetic result as a bonus to the success in treating the cancer," he says. Also intriguing, he says, is that animal studies have suggested that patients' immunologic functioning is better maintained with the less-invasive laparoscopic techniques, which may enable the body to better fight off cancers, reducing recurrence rates.

Rectal cancers present the most technical challenges for the treatment team, both because of the anatomic constraints of the deep pelvis and the difficulty of re-establishing bowel continuity after the tumor is removed, he says. "Historically, rectal cancers have had a very high rate of local recurrence—that is, in the same area as the original tumor," he says. "While those rates have historically ranged from 15 to 40 percent, in our experience, the combination of preoperative chemotherapy and radiation therapy, as well as careful surgical technique, has

Triple-braided cord: Duke surgeons, medical oncologists, and radiation oncologists combine their varied expertise to create better outcomes for cancer patients. Pictured (left to right) are Drs. Hurwitz, Willett, and Ludwig.

{Screen} TEST

Overcoming Barriers to Colonoscopy

ONLY ABOUT 40 PERCENT of patients who should be screened for colorectal cancer are getting screened. Among minority groups the rate is significantly lower. Failure to screen makes what would be a highly preventable and treatable disease if detected early—before symptoms arise—far more deadly than it ought to be.

> "Sometimes the doctor just assumes the patient won't accept [colonoscopy] and fails to even bring it up."
>
> —JOANNE WILSON, MD

Physicians can help bridge the screening gap, according to Joanne Wilson, MD (pictured above), a Duke gastroenterologist who was recently appointed to the National Commission on Digestive Diseases. Here's how:

Fully inform patients about their risk. The Centers for Disease Control (CDC) Web site's colon cancer page (www.cdc.gov/colorectalcancer) offers screening guidelines and patient materials. Colon Cancer Alliance (ccalliance.org), a patient advocacy organization, is another good resource.

Address the range of concerns. "Patients are worried about colonoscopy being difficult or painful and about potential complications," says Wilson, but those aren't the only things holding them back. "People are waiting until they're 65, when Medicare will cover the cost—that's way too late." Then there's "simple logistics. Someone has to drive you home because of the sedation." While physicians can't necessarily resolve these issues, they can encourage patients to communicate with the insurance provider, discuss a payment plan with the institution, or find other solutions.

Anticipate objections—but don't presume you can't persuade. Socioeconomic status may affect one's attitude toward preventive care, says Wilson. "Some people think, 'I've got plenty to worry about right now; I can't think about what's going to happen five to 10 years from now.'" Even so, don't second-guess them out of the option. "Sometimes the doctor just assumes the patient won't accept [colonoscopy] and fails to even bring it up." Talk to the most resistant patients about alternatives such as fecal occult blood testing (FOBT) yearly with flexible sigmoidoscopy or double-contrast barium enema every five years with colonoscopy as the backup. "These approaches are not as good as colonoscopy," says Wilson, "but they are better than nothing."

driven those rates down to 5 percent or less. Duke is the only center in the region that has reported these very low local recurrence figures in patients with locally advanced rectal cancer."

The Duke team strives to not only treat the rectal tumor, but also preserve bowel function, eliminating the need for a permanent colostomy. Their sphincter-preserving techniques that combine skilled diagnosis and treatment planning, preoperative chemotherapy and radiation therapy, and careful surgical technique with novel methods of recreating the rectum have greatly enhanced the likelihood that patients can have normal function.

For Kimberly Booth of Raleigh, it was this experience that enabled both successful treatment of her rectal cancer and preservation of normal bowel function. Diagnosed with rectal cancer in 2003, she first saw another surgeon "who was supposed to be one of the best," she says. "He told me that there was no way that he could save my rectum, that he was going to have to give me a colostomy for life.

"So, I got Dr. Ludwig's name from one of my other doctors and … he told me he was 95 percent sure he could save it." Indeed, Ludwig did preserve Booth's bowel function, and after a period of recovery, she says that, except for irritable bowel syndrome, her function is normal. "He's a wonderful man," she says of Ludwig. "He's my hero."

Historically, rectal cancers have had a very high rate of local recurrence, ranging from 15 to 40 percent, says Ludwig—but at Duke, the combination of preoperative chemotherapy, radiation therapy, and careful surgical technique has driven those rates down to 5 percent or less.

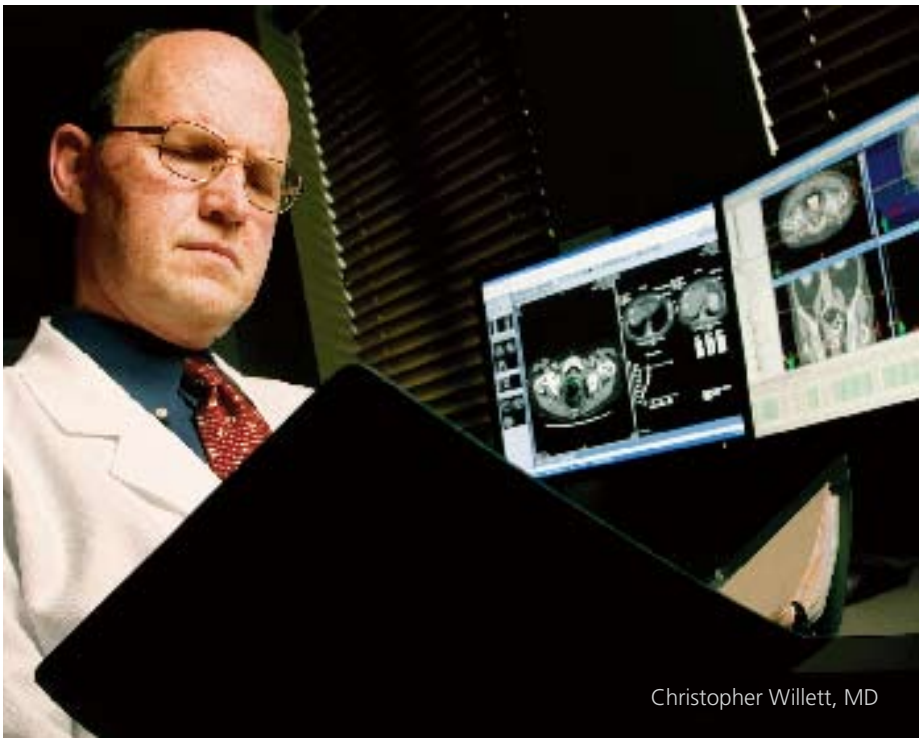
CHEMOTHERAPY CHECKMATE

In contrast to the dramatic role of surgery in treating colorectal cancers, chemotherapy is more of a subtle biological chess game. Its aim: to develop strategies to attack multiple weaknesses of a cancer at once, says Herbert Hurwitz, MD, associate professor of medicine and a member of the Duke Comprehensive Cancer Center.

The chemotherapy weapons consist of three basic classes of drugs. Traditional cytotoxic drugs tend to kill rapidly dividing cancer cells at higher rates than the more quiescent normal cells of the body. New, more targeted drugs bind and inactivate key chemical signals called growth factors that cancers need to proliferate. And antiangiogenesis drugs block the rapid growth of blood vessels that tumors need to thrive.

Says Hurwitz of antiangiogenesis drugs, "It's like using selective root killers to get at a weed. If the roots are pruned back or restrained, the weed either can't grow or will actually shrink or die."

Hurwitz and his colleagues are constantly seeking new combinations of these drugs that can have synergistic effects in killing tumors. For example, in a landmark study reported in 2003, Hurwitz and his colleagues found that a combination of the antiangiogenesis drug bevacuzimab



Christopher Willett, MD

(trade name Avastin) with traditional chemotherapy drugs both shrank tumors and extended survival in patients with metastatic colorectal cancers. Now, they have refined that "cocktail," substituting newer, improved chemotherapy drugs while keeping the anti-angiogenesis advantages of bevacuzimab. Initial studies of the new combination have showed promising results, and they are now confirming those results with a large, nationwide study.

"The rationale is to optimize all the ingredients to make the combination both more active and more user-friendly, with fewer side effects and, where possible, with drugs that can be taken orally rather than intravenously," says Hurwitz.

What's more, says Hurwitz, he and his colleagues are mounting other studies of drug cocktails with more ingredients—not only including antiangiogenesis and cytotoxic drugs, but also the targeted inhibitors of tumor growth factors.

"We're trying to fine-tune each of the three modules—chemotherapy, anti-angiogenesis, and growth factor inhibition—independently to come up with an optimal package," he says.

The team is also developing new ways to monitor the success of such drug therapies—for example, analyzing whether telltale marker proteins from the tumor or in the blood of patients undergoing treatment can reveal the status of the cancer.

"We're trying to determine whether or not, during these treatments, there are specific factors from a tumor that can help predict who is more or less likely to respond. And when we can identify such factors, they will give us a good lead on what regimen to use. When we ultimately reach the point where we have effective treatments and diagnostics that predict response, we can hope to tailor treatments effectively to each patient in a way that resembles current combination AIDS therapies," he says.

Kimberly Booth was successfully treated for rectal cancer at Duke.

RADIATION EFFECTS

The third "threat" against colorectal cancer—radiation therapy—works very much in synergy with surgery and chemotherapy, emphasize the Duke physicians. They combine radiation therapy with chemotherapy in preparation for surgery, to improve the surgeon's ability to remove the tumor, and to minimize the chance of recurrence.

They also use radiation therapy right in the operating room to improve the success of rectal cancer surgeries. By applying radiation selectively to the rectal region immediately after the tumor has been excised, the likelihood of recurrence

can be greatly reduced, says Christopher Willett, MD, chair of the Department of Radiation Oncology.

Willett and his fellow radiation oncologists are also working with Duke medical oncologists to evaluate whether classic chemotherapy and radiation can together be made more lethal to rectal cancers than either alone.

In one intriguing trial, for example, they are exploring whether the antiangiogenesis drug bevacuzimab can "set up" a tumor for destruction by radiation. The approach seems counterintuitive, says Willett, given that such drugs supposedly block formation of blood vessels within the tumor—the very vessels through which the tumor-busting agents are delivered.

"We're testing a theory called the 'normalization hypothesis,'" explains Willett. "The theory holds that antiangiogenesis drugs improve a rather distorted, aberrant tumor vasculature. And that process improves the flow of oxygen and nutrients to the tumor that will result in more effective response to radiation and chemotherapy."

Willett emphasizes that the combination of expertise and collaboration has rendered the Duke approach to treating colorectal cancers among the best in the country.

"Like Drs. Ludwig and Hurwitz, my colleagues and I focus our practices almost exclusively on gastrointestinal cancers," he says. "We have a lot of clinical experience, but we also have a deep interest in clinical trials to develop even more effective approaches to treating our patients. And we have a close working relationship to develop the best strategies for treating these patients."

Patients are also doing their part to combat colorectal cancers. For Kimberly Booth, her ordeal with rectal cancer has given her a missionary zeal to persuade others to have colonoscopies early. "My oncologist told me her Christmas present [after my treatment] was seeing me come through the door, because she said I didn't realize how close I was to not coming through that door," she says.

Don't put off your colonoscopy, she urges: "This cancer is just so easy to diagnose if you can get it early enough. I was only 44 when they diagnosed it and nobody in my family has it. It's just something you've got to do to take care of yourself."

Kimberly Booth's ordeal with rectal cancer has given her a missionary zeal to persuade others to not put off their colonoscopies. "It's just something you've got to do to take care of yourself," she says.

So actually, to the clinical "triple threat" of Duke physicians treating colorectal cancers, one should certainly add a fourth—that of the crusading legions of successfully treated patients who seek to ensure that their loved ones never have to experience the anguish of cancer themselves. o

centered.

With a major PBS special airing this spring and a new $11-million facility opening in the fall, the Duke Center for Integrative Medicine's quest to balance conventional and complementary care is reaching a broader audience than ever.

Amy Brannock had always said she'd never undergo chemotherapy: "It's so toxic. I thought I'd find natural and alternative approaches instead." But when she was diagnosed with ovarian cancer in early 2002, she realized she'd do whatever it took to fight it. "I really wanted to get this stuff out of my body," she recalls. Her physician, a proponent of integrative medicine, encouraged her to pursue aggressive treatment and explore complementary remedies to counter the effects.

Friends steered Brannock to the Duke Center for Integrative Medicine (DCIM), and she went for a consultation. "They didn't just look at me as my diagnosis, my pathology report, my CT scan, my tumor," Brannock recalls. "They wanted to know about my whole life, my support systems, my spiritual practice. It really resonated with me."

BY JUNE SPENCE

The Duke Center for Integrative Medicine will open its new $11-million, 27,000-square-foot facility on the Duke Center for Living campus this fall. "Our goal is to use the space as a living laboratory where we design, research, and create new models of care," says director Tracy Gaudet, MD (pictured in the center's future meditation room). "Having bricks and mortar committed to integrative medicine will really help move it forward. We want patients, students, and physicians to come into the space and experience health care done in a different way."

"We are not advocating alternative approaches over mainstream ones. We are conventionally trained health care providers. What we practice at the center is the best practice of medicine."

Tracy Gaudet, MD

The DCIM health team recommended specific vitamins, Chinese herbs, and acupuncture, in addition to the chemotherapy recommended by her oncologist. At their prompting, Brannock also enrolled in the center's mindfulness-based stress reduction course, "to help me stay in my body, to learn to be quiet, to learn equanimity."

The therapies helped her tolerate chemotherapy, "so much better than I'd expected." During a second round of treatment, "I never even lost my hair," she recalls. "I'd started graduate school and only missed one class that year."

By July of 2005 Brannock's tumors had stabilized. On her oncologist's recommendation she went on a "chemo holiday," expected to last three months. Her goals during this break were to detoxify her body and rebuild her immune system, and she again consulted DCIM for guidance. To date, she has not needed to resume chemotherapy.

Brannock hopes the break is permanent, of course. But either way, she's doing what she can to stay well and maintain that hard-earned equanimity. She follows a customized regimen of vitamins, minerals, and herbal supplements and has recently begun hypnosis and energy work to stay focused on her healing and reinforce the mind-body connection. "These things are new to me," she says. "I'm trusting the process." She's pursuing these approaches with her current oncologist fully in the loop. "He's open-minded about complementary modalities. I feel like we're in this together; it's not an either-or proposition."

INTEGRATIVE MEDICINE GOES MAINSTREAM

The physician's response reflects the true intention of integrative medicine, according to center director Tracy Gaudet, MD. "A huge misconception is that we'd be telling people to try some herbal remedy instead of, say, chemotherapy," she observes. "Absolutely not. Success for us is when a cancer patient comes to us saying, 'I don't want chemo, I don't want radiation; I want to do X, Y, or Z alternative,' and we help them to understand that they can use alternative approaches alongside conventional treatments. That's good medicine."

It's also a revolutionary approach to patient care, one that began gaining a foothold in academic medical centers only in the 1990s. An early leader in the field, Duke began dipping its toes into integrative medicine in 1993 with the formation of a mind-body medicine faculty interest group; by 1998 Duke had secured funding that ultimately helped launch DCIM in 2000. Duke is a founding member of the Consortium of Academic Health Centers for Integrative Medicine, and DCIM is recognized as one of the nation's top six integrative medicine centers by The Bravewell Collaborative, a group of philanthropists dedicated to advancing the field.

This spring DCIM was featured in the PBS documentary *The New Medicine*, which explores what the program Web site describes as "a burgeoning movement taking place in hospitals and clinics across the country: integrating the best of high-tech medicine with a new attitude that recognizes it is essential to the healing process to treat the patient as a whole person, and not a cog in an assembly line."

Integrative medicine goes beyond complementary and alternative medicine, or CAM, in that it seeks to encompass all aspects of healing and wellness. Therapies and consultations available through DCIM include preventive and diagnostic screenings, nutritional counseling, and physical therapy in addition to massage, acupuncture, hypnotherapy, yoga, and stress management. The aim is to merge safe and demonstrably effective CAM—when appropriate—with the best of conventional care, Gaudet says.

"We are not advocating alternative approaches over mainstream ones," she emphasizes. "We are conventionally trained health care providers. What we practice at the center is the best practice of medicine."

Still, Gaudet and her colleagues understand that most physicians don't have the luxury of offering such a wide range of services within their practices. And they view the DCIM as a resource for physicians as much as for as patients. It's a place to refer patients for a more in-depth exploration of integrative medicine than their physicians may have time for.

"We receive referrals from Duke's Cancer Center frequently," explains Linda Smith, a physician assistant and DCIM's director of programs. "They're providing excellent oncology care, but they want someone to be able to sit down with the patient to talk about supplements, complementary therapies, pain management, and mind/body interventions that will make a difference in their quality of life."

Once the new center is opened, referring physicians may also opt to selectively prescribe integrative medicine therapies, and the center offers the reassurance of Duke standards in that regard, says Smith.

"A physician may say, for example, 'I want my patient to have acupuncture before chemotherapy on a regular basis. [Acupuncture has demonstrated effectiveness in alleviating nausea.] I want to send him to you; you're right here at Duke. I can trust the providers here.'"

"Whatever has efficacy for the patient will be made available," adds Smith, "whether that's Western medicine, an ancient therapy, or a combination of both."

To help measure efficacy, DCIM researches how its own approaches to care impact patients. The early results of their research on mindfulness-based treatment for eating disorders show it to be a promising means of regulating eating behavior. Another DCIM study examines the effect of personal health plans, a keystone of the center's approach, on patients with high risk factors for cardiovascular events. The results were positive; participants measurably improved their food choices and exercise patterns and reduced their 10-year risk of a cardiovascular event from 9.5 percent to 7.5 percent.

A WORKABLE PLAN

In November, DCIM will begin offering a signature "Immersion Health Planning" program, typically a four-day visit during which a patient is screened, interviewed, and evaluated by a medical team that then devises a comprehensive health and wellness plan specific to the individual's current health needs and long-term goals.

"Many people leave a physician's office with recommendations that they never follow," says Smith. "We believe that noncompliance has a reason—first of all, it's often not created within a partnership." She recalls a patient with arthritis who was in a lot of pain but needed to get more active to control her weight. "I spent several minutes extolling the virtues of warm-water exercise and how ideal it was for her condition. When I was done, she looked at me and said, 'I hate the water.' So obviously that would not be part of a good plan for her! We had to look deeper."

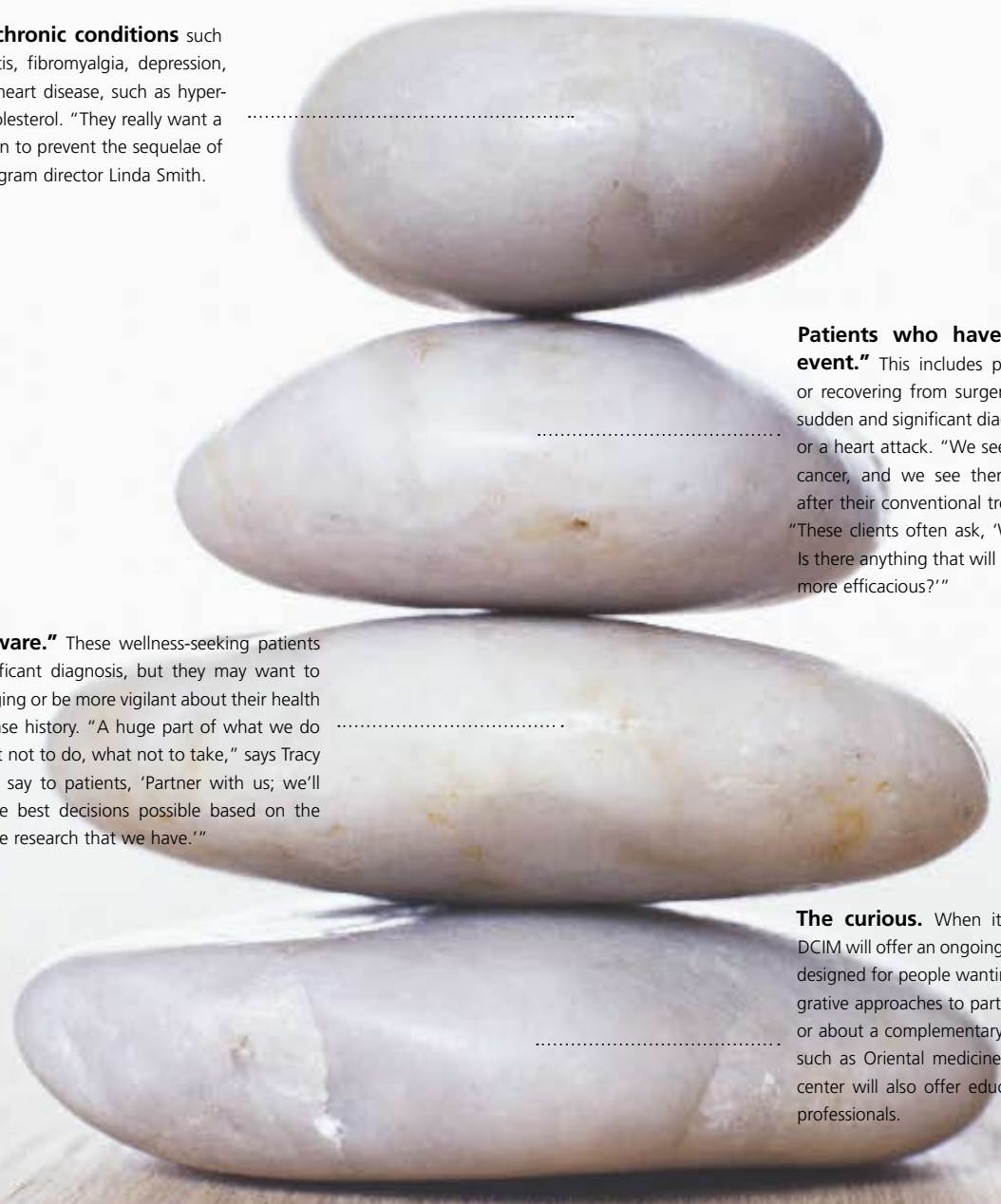
To help achieve a practical health plan at DCIM, a certified health coach works one on one with the patient and remains involved even after the patient's visit. "The coach helps people take a goal from the level of a New Year's resolution and turn it into practical reality that fits

"We help people take a goal from the level of a New Year's resolution and turn it into practical reality that fits their lifestyle, schedule, even belief system."

Linda Smith, DCIM director of programs

who aims for the center?

Patients with chronic conditions such as diabetes, arthritis, fibromyalgia, depression, or risk factors for heart disease, such as hypertension or high cholesterol. "They really want a personal health plan to prevent the sequelae of diseases," says program director Linda Smith.



Patients who have had a "health event." This includes patients preparing for or recovering from surgery, or patients with a sudden and significant diagnosis, such as cancer or a heart attack. "We see a lot of people with cancer, and we see them before, during, or after their conventional treatment," says Smith. "These clients often ask, 'What more can I do? Is there anything that will help my treatment be more efficacious?'"

The "health aware." These wellness-seeking patients don't have a significant diagnosis, but they may want to focus on healthy aging or be more vigilant about their health due to family disease history. "A huge part of what we do is tell patients what not to do, what not to take," says Tracy Gaudet, MD. "We say to patients, 'Partner with us; we'll help you make the best decisions possible based on the information and the research that we have.'"

The curious. When its new center opens, DCIM will offer an ongoing calendar of programs designed for people wanting to learn about integrative approaches to particular health concerns or about a complementary or alternative system such as Oriental medicine or acupuncture. The center will also offer education for health care professionals.

What's covered? DCIM's services are often out-of-pocket expenses at present—although coverage varies according to the insurer. The center will generate and code the appropriate forms so that patients can apply for reimbursement from their insurance carriers. The center also plans to offer free educational seminars for the community when its new facility opens, and offers a limited amount of financial aid to help low-income patients take advantage of its Mindfulness-Based Stress Reduction classes.

For more information, please call 919-660-6826 or 866-313-0959 (toll-free) or visit dcim.org.

Zen and the art of health maintenance
DCIM's new facility will feature meditation rooms, therapeutic rooms, workshop space, a demonstration kitchen, a library, and even an indoor Zen garden.

their lifestyle, schedule, even belief system," says Smith. "The personal health plan that they create with us becomes something that they're able to live when they're at home."

Martha McInnis travels from her hometown of Montgomery, Alabama, to DCIM for a week each year to meet with her health care team for screenings and to make any needed updates to the health plan she began developing with them back in 1998—"before there even was a center." During the previous year, she'd been diagnosed with and treated for breast cancer. "After that, I knew I had to readjust my lifestyle," McInnis recalls. "I was stressed to the maximum, a real type-A personality."

She saw an advertisement for a healthy lifestyle retreat at Duke's Center for Living and signed up. There, she was introduced to "the whole gamut of mind-body experiences," including yoga, tai chi, and mindfulness meditation. She attended lectures on holistic approaches and cardiovascular health, learned about stress reduction, and received nutritional counseling. She returned for subsequent retreats and conferences, began consulting with Gaudet about her health goals, and became a patient with DCIM once it was established.

In keeping with the health plan devised for her at DCIM and refined at each successive visit, McInnis practices meditation daily and has become a more conscientious eater, supplementing her diet with vitamins and minerals recommended by her health care team. She has been cancer-free since her original diagnosis and treatment; now cardiovascular health is her chief concern. She works out on a treadmill for aerobic conditioning, and she practices tai chi regularly, an activity better suited to her body than yoga.

McInnis retains a primary care physician in Montgomery but feels the interaction is "sort of hands-off." The individual attention she receives at DCIM makes her yearly trip to Durham seem well worth the effort. "It's a very personal partnership," she explains. "Here, you can sit down and talk as a friend to your doctor, and they have the time to talk to you and to explain things."

A DEDICATED ENVIRONMENT

This fall, DCIM will open a new facility designed to enhance that atmosphere of unhurriedness and healing. "This building truly is the first of its kind," says Gaudet. "There are integrative medicine clinics within academic health centers, but Duke is the first to make this kind of commitment to creating a dedicated environment for integrative medicine."

Funded by an $11-million donation from philanthropists Christy and John Mack, the building features curved walls and soft edges to emphasize flow and healing. "It's also intended to be a green building," says Smith. "Even the way you flush the toilets will be environmentally sound!" The mood is "contemplative, unrushed." Garden views as you enter the building and therapeutic rooms that open on an indoor Zen garden are intended to bring the feeling of nature inside the facility. Examination and consultation rooms are designed to look and feel decidedly non-clinical. Amenities include a small fitness center, workshop rooms, a health resource store, a patient library, a demonstration kitchen with a dining area, and two meditation rooms, one of which is free-standing. There will be comfortable seating and special attention to music and lighting capabilities throughout the facility.

"We're incredibly fortunate at Duke to have a number of critical factors come together," says Gaudet. "The 26-acre Center for Living campus is idyllic. We have the support of the leadership and faculty, and the donor's vision. We have an overall environment at Duke that is one of innovation and entrepreneurship. All of this comes together in a way that I don't think any other medical center could match." o

For more information on DCIM programs and services, please visit dcim.org or call 919-660-6826 or 866-313-0959.

Duke Executive Health Program

taking care of business

YOU DON'T HAVE to be a top-level business executive to neglect your health, but it helps. People with demanding jobs often work long hours, forgo sleep, eat poorly, and get insufficient exercise. Because of their hectic schedules, many professionals aren't getting regular check-ups and health screenings, either.

Kevin Waters, MD, director of the Executive Health program on Duke's Center for Living campus, helps the high-powered get a better handle on their health. "These executives, they all have a business plan, they all have a financial plan, but if you ask what their health plan is, they may say, 'I get a physical.' Well, we do more than that. We give them a complete assessment of where they stand and what they need to do to get and stay healthy."

Duke had offered executive health examinations at the behest of companies for years, but the formal program, with a dedicated staff and quarters in the Wallace Clinic, began in 1991 under the directorship of James Clapp, MD. Waters took the helm in 1999. Such prominent companies as General Motors, General Electric, Corning, and Milliken send their executives to the program annually. Fees are out-of-pocket, but around 60 percent of participants have their costs covered by their employers.

The program offers three-day "Healthy Escapes" for individuals, but the cornerstone service is the "Executive Health Assessment," a comprehensive physical and wellness counseling that takes place over the course of a fully loaded day. "We provide in one day tests and services that would take weeks of appointments to set up on your own," notes Waters.

Typically patients are asked to fast the night before so blood can be drawn when they first arrive in the morning. They're offered a light breakfast before meeting with one of the program physicians, Waters or Lisa Giannetto, MD, for a complete medical history and physical exam. That's generally followed by an EKG, chest x-ray, body fat assessment, and stress test. Additional screenings, assessments, and consultations are available as needed, but all participants meet with a nutritionist to look at eating habits and customize a food plan, an exercise physiologist to hone an individualized fitness program, and a clinical psychologist for a stress evaluation.

"Everybody thinks stress is all in your head, but it's in your biochemistry," Waters observes. "For some people it causes their blood pressure to go up, for some it causes sleep disturbance, for some it increases the acid in their stomach. People need to monitor stress just as they do other aspects of their health."

The day concludes with a second meeting with the physician to review test results and discuss health recommendations. "No one feels like a number here," says Waters. This level of individual attention is increasingly rare in other medical contexts, and Waters feels it is one of the program's great strengths, efficacious for patient and physician alike. When Waters joined the program, he left behind a solo private practice where he routinely worked 100-hour weeks yet barely had time to sit down with his patients. "When you ask patients what they want from their health care, it's always more time with physicians. Well, guess what? When you ask physicians what they want, it's the same thing: more time with patients. That's not an issue here. I love it."

For more information, visit the Duke Executive Health program at dukeexechealth.org, call 919-660-6606, or e-mail ehpinfo@dukeexechealth.org. Participation is not limited to executives.

Aiden Glandorf
September 2004 · 2 pounds
footprints at 3 weeks (actual size)

SAVINGTHESMALLEST

What medicine can do now for babies born too soon

Of the hundred-odd nights they spent in Duke Hospital's intensive care nursery, the one Jim and Tara Glandorf learned that their son was showing signs of kidney failure may have been the worst. Aiden had weighed just two pounds when he was born at 26 weeks with twin sister Olivia, who was even tinier but much stronger than her brother. Modern medicine had already saved their young lives more than once. Both had spent time on special ventilators and received surfactant, a drug specially developed to open up their immature lungs—a therapy Duke neonatologists helped make possible. Aiden had also weathered two spinal taps to test for meningitis and survived bleeding in his brain, a serious and common problem in extremely low birth weight infants.

BY BETH McNICHOL

But that night, Aiden turned a shade of gray, and "My husband just lost it," says Tara. "We thought we were going to lose our son. A doctor came in and didn't say anything, but just put her arm around Jim. There were many babies in the nursery that needed attention; it just meant the world to us that she would do that."

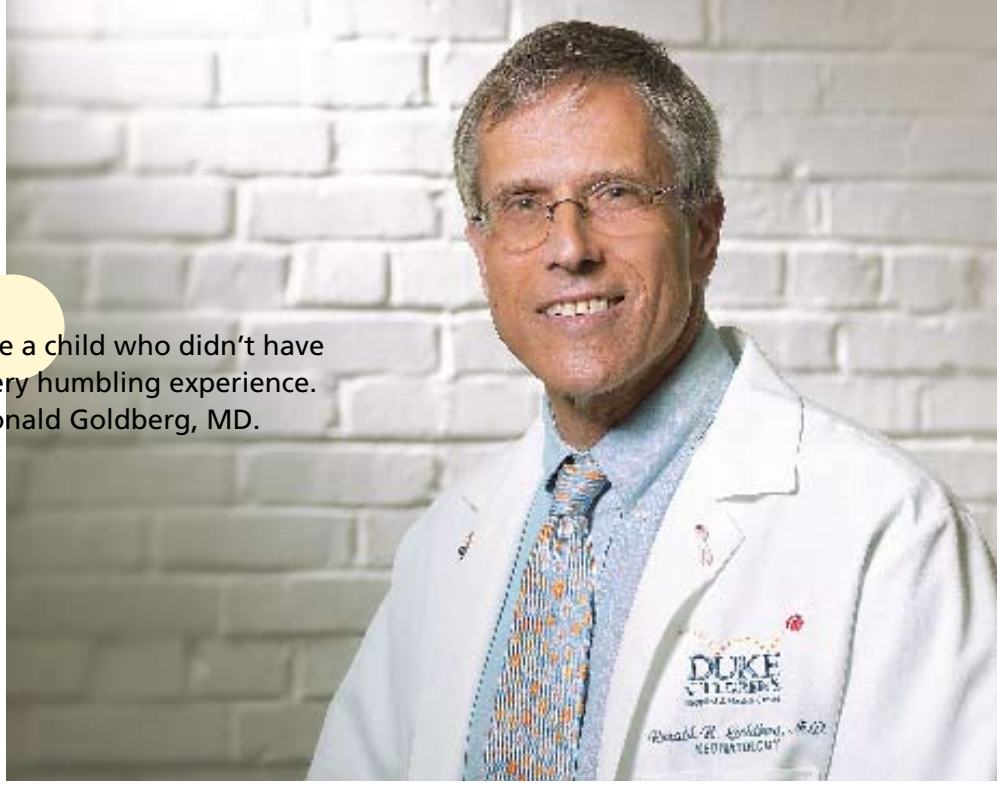
It would be three and a half months and many more agonizing nights after the twins' birth, but Aiden would go home with his parents and sister. Within 24 hours, his kidneys responded to treatment, and he was back to his pink, if still fragile, self.

The Glandorfs know now that preemies are like that. It's one step forward, two steps back, until the day your child "hits that magic corner, and it's just eating and growing to come home," Tara says. They know that, while they can't see those same doctors breaking new research ground when they leave the nursery for the lab, the Duke team manifests hope for parents in other ways, sending signals that small lives are big, bold, and completely capable of saving here. It's a quiet arm around a shoulder; an oxygen tube placed in a tub for a bubbling, triumphant first bath; the imprint on a piece of paper of a tiny foot that, each week, grows bigger and bigger and bigger, until one day, one family at a time, they get to go home.

GROWTH CHARTS

Thirty years ago, most babies as small as Aiden and Olivia Glandorf never made it to that first bath, much less their front porch. Today, they have a 90 percent survival rate—and despite the medical challenges they face early on, most of them catch up with their full-term peers by elementary school. Moreover, advances in treatment are saving infants at ever-younger gestational ages and smaller birth weights. Duke has an excellent reputation for helping some of the most critical patients who are a part of the preterm boom—infants born weighing less than 1,000 grams (2.2 pounds)—and even babies as tiny as one pound have a fighting chance.

That's not to minimize the challenges. Preterm births are on the rise nationally, and especially in North Carolina, which had one of the highest rates in the country in 2003—13.6 percent of all live births in the state—due in part to fertility treatments and increasing maternal age. The rate of disability is not increasing, thanks to dramatic advances in both neonatology and maternal-fetal medicine, but the average infant born at 24 weeks still requires a three- to four-month hospital stay. Marshalling



"We have an opportunity to give a child who didn't have any chance a good life. It's a very humbling experience. It's what motivates us," says Ronald Goldberg, MD.

enough resources to provide the high-intensity care all these tiny patients need is a big challenge—as is finding new treatments to improve their odds even further.

Even at a major medical center like Duke, "It was dark days just a few years ago," says neonatology division chief Ronald Goldberg, MD. "In 1996 we had only four neonatologists to cover two hospitals, no fellows, and no funding from the National Institutes of Health. Our physicians were interested in basic science and clinical research, but when you have such a large service load, it gets difficult to find the time."

Under the leadership of Goldberg and associate director David Tanaka, MD, the division has undergone a growth spurt as impressive as a thriving newborn's: today it includes 12 neonatologists, 17 nurse practitioners, and six fellows, an expansion in staffing that has come along with a similar rise in research funding—some $16 million from the NIH alone last year. To keep up with its exploding patient population, the division has expanded from 42 to 68 beds at Duke and Durham Regional hospitals, with plans to add 12 more at Duke. In March, Duke Neonatology also began providing care at a new, 12-bed unit at Alamance Regional Hospital.

A DELICATE BALANCE

There's no doubt that the best place for growing a baby is the womb, but these neonatal units are getting better and better at mimicking the most critical elements of that environment—and making amends for what they can't. In the Intensive Care Nursery (ICN), bright lights are kept to a minimum, the isolettes cozy warm, with a carefully calibrated network of machines and tubing delivering oxygen and food to lungs and stomachs pressed into use before they were quite ready.

Despite such considerations, preemies are inevitably exposed to all kinds of "noxious stimuli," as neonatologist Ricki Goldstein, MD, puts it: "Noise, pain, touch, feeding and suctioning tubes being put in their mouths, bright lights in their eyes . . . . Their whole sensory processing system is disrupted, and that can lead to developmental issues," ranging from chronic lung disease to feeding problems and neurodevelopmental disorders.

In some cases, in fact, the very interventions needed to save preemies can also injure their delicate bodies—a conundrum Duke researchers are tackling by finding new ways to minimize the risks and maximize the benefits.

One such therapy still hotly debated in the neonatology community is high-frequency ventilation (HFV)—a special respirator that helps premature babies threatened by respiratory failure. Duke neonatologists were involved in early development and testing of this mode of ventilation, use of which has since been expanded to older children and adults. "When it's used right, it saves lives and reduces the risk of chronic lung disease in babies with lung failure," says Goldberg. "But the data also show that when it isn't used right, it can cause lung or brain injury."

Duke neonatology researchers have defined protocols for using HFV safely, thereby allowing babies to take advantage of the therapy's considerable benefits. While a standard respirator for preemies "breathes" 40 to 60 times per minute, babies on HFV breathe 600 times a minute, taking in just a fifth of a teaspoon of oxygen with each puff.

"A baby on HFV actually vibrates," says Goldberg. "The closest analogy I can think of is the very short, rapid breaths of a panting dog. By providing shorter breaths and more of them, HFV carries far less risk of overinflating and injuring the baby's lungs."

Similarly, William Malcolm, MD, a pediatrician who specializes in neona-

tal convalescent care, has developed a potential way to ameliorate the serious complications that can result from treatment of necrotizing enterocolitis (NEC). Infants with NEC have an infection in the intestinal wall that can lead to perforation of the intestine, requiring resection of part of the bowel and an ostomy.

While these surgeries are lifesaving, they can also cause infants to become dangerously dehydrated and unable to absorb proper nutrients. Poor growth and liver failure can result. Through a two-year study, Malcolm found that adding microlipids to formula or milk slows down the rate of stomach emptying as well as small bowel transit time, increasing nutrient absorption.

"Adding this fat-containing emulsion to the diet is of nutritional value as well," says Malcolm, who presented his findings at a Pediatric Academic Societies meeting this spring. "We also noticed that the babies had a significant increase in growth and a significant decrease in ostomy output, which meant they were able to wean off their IV nutrition."

PARTNERS IN MANY PLACES

Many of the research studies carried out in the ICN are funded through the Neonatal-Perinatal Research Institute (NPRI), a multimillion-dollar, multidisciplinary program begun shortly after Goldberg's arrival that combines explorations in neonatology with expertise from more than a dozen other areas at Duke University, from cell biology to engineering.

In one of the most promising cross-disciplinary partnerships, NPRI researchers teamed with Duke cardiologist and pulmonologist Jonathan Stamler, MD, to test how a drug that Stamler had previously developed might be useful in treating persistent pulmonary hypertension (PPH) in babies. A potentially deadly condition, PPH causes blood vessels within the lungs to constrict, severely limiting the amount of oxygen that can be pumped through the body.

Stamler's discovery, ethyl nitrite (ENO) in inhalation form, was shown to successfully treat PPH in all seven full-term infants enrolled in a 2002 Duke study led by Goldberg. A second Phase I study to test safety and dosage requirements over a longer period of treatment time is planned.

Although ENO's safety has not yet been tested for preterm infants, it holds promise for preemies, in whom PPH is a common problem. "We expect some diseases of preterm infants may benefit from ENO," says Michael Cotten, MD, assistant clinical professor. "But we always want to make sure these things work on big babies first."

NETWORK WORK

Indeed, one of the major problems facing neonatology is a shortage of information about preemies; despite the recent gains

Cycles of light

Most ICNs are kept in near-darkness to simulate the womb, but neonatal clinical nurse specialist Debra Brandon may have found a better alternative. In an NIH-funded study, she provided premature infants with periods of light (mimicking daytime), filtered through a netting similar to car sunshades, and periods of near-darkness (nighttime), in which their incubators were blanketed with a coverlet. Brandon found that babies who received the day/night cycled light earlier in their post-gestation period gained weight faster than those who received it later.

"Cycled light mimics the circadian rhythm cues that are established for full-term babies in the womb," says Brandon, an assistant professor of nursing and pediatrics. "Circadian rhythms are important to everyone's health and well-being, and establishing a good circadian pattern seems to benefit preterm babies in terms of sleep, immunological function, and digestive system function."

Brandon's follow-up research will chart the long-term developmental effects of cycled light.

"Medicine has gotten pretty good at doing the heart surgeries [to repair abnormalities], but by that point, the ballgame is over. You already have the heart defect. What we'd like to do ultimately is to prevent them from occurring."

—Erik Meyers, MD

The earliest medicine: Combating congenital defects

PHYSICIANS ARE GETTING better and better at treating infants who, whether premature or full-term, enter the world with medical problems. But Duke researchers like Erik Meyers, MD, and Margaret Kirby, PhD, are chasing the Holy Grail of early-life medicine: preventing the problem before the sperm meets the egg.

Both Meyers and Kirby study the causes of congenital heart defects, which result in more deaths in the first year of life than any other birth defect. Because the heart forms in the embryo in the first two months of gestation, often before the mother knows she's pregnant, it's also one of the earliest defects possible.

Kirby's lab focuses on the development of the arterial pole of the heart. Following her breakthrough discovery of neural crest cells' role in normal heart development, a second group of myocardial cells that form the arterial pole were discovered to be involved in many classes of conotruncal (outflow tract) malformations. Her next step will be to study the "nature or nurture" causes behind the defects in various animal models.

Meanwhile, Meyers and his team are investigating heart formation in mouse embryos who suffer from defects similar to those found in humans, hoping to pinpoint which genes contribute to a specific congenital problem. Already, Meyers has found clues to what goes wrong with a collection of cells in pulmonary atresia to prevent the pulmonary artery from forming, as well as linkages between the Fgf8 gene and DiGeorge syndrome, another common congenital heart defect.

Meyers says the likely benefit of such work will be to "develop insight into which environmental and genetic factors could increase the risk for a family having a child with congenital heart defects"—to learn why, for example, a defect in a particular gene might make a diabetic mother more prone to having a baby with heart problems.

"Medicine has gotten pretty good at doing the heart surgeries [to repair abnormalities]," Meyers says, "but by that point, the ballgame is over. You already have the heart defect. What we'd like to do ultimately is to prevent them from occurring."

In recent years, Duke has had one of the best survival rates for infants weighing less than 1,500 grams among the 16 major academic medical centers of the NIH-supported Neonatal Research Network.

in their survival rates, finding enough infants to produce definitive research results is still too great a challenge for most individual neonatology centers. To that end, Duke recently was approved for a second five-year term in the NIH-sponsored Neonatal Research Network, which it joined in 2000. The network, a national consortium of 16 clinical research centers, combines the vast expertise of its member researchers while offering large study populations—outcomes of more than 3,000 preterm infants are collected annually, with a database that now includes more than 40,000 subjects.

At Duke, Cotten is spearheading an effort to gather 1,000 genomic samples from extremely low birth weight babies, drawing from the network's collective patient pool. When complete, the samples stored in the Duke Center for Human Genetics DNA bank will comprise the largest such collection to date, giving investigators a treasure trove of information to use in teasing out genes linked to diseases associated with extreme prematurity.

More immediately, Duke neonatologists such as Richard Auten, MD, are leveraging the network's resources to investigate whether the preemies can benefit from the current intervention of choice for respiratory failure in full-term infants—inhaled nitric oxide (NO), a drug whose FDA approval for use in humans originated through a multicenter study coordinated by Duke. While the drug is not yet approved for use in premature infants, Duke recently participated in an NIH-sponsored multicenter trial to determine whether inhaled NO can prevent chronic lung disease of prematurity. Study results were presented in May at the Pediatric Academic Societies annual meeting.

SMALL PATIENTS, BIG COMMITMENT

Efforts like these get preterm infants closer to going home. And while discharge usually is a happy day for parents, it can also mean new developmental challenges for their children, from feeding struggles to delays in motor skills, according to Goldstein, an associate clinical professor of pediatrics who directs Duke's Special Infant Care Clinic (SICC).

To help them adjust to life on the outside, 75 percent of babies discharged from the ICN are enrolled in the SICC, a neurodevelopmental and medical follow-up clinic where patients are followed by a multidisciplinary team that includes neonatologists, a pediatrician, a psychologist, and physical, occupational, and speech therapists until they reach age three. Infants visit the clinic at regular intervals and whenever developmental concerns arise until the clinic staff "graduates" them to community care.

Under a three-year grant from The Duke Endowment, Goldstein has supervised an early intervention program called "Community Pathways." The program funds developmental family specialists, who teach families about early intervention programs while infants are still hospitalized and help them access the resources available to them in their communities when they return home. Goldstein hopes that the program's excellent results will justify this position becoming a permanent one in the pediatrics department.

As part of the grant, she also is completing a traveling effort throughout North Carolina to educate well-child care providers and community interventionists who may be rusty on the care of preterm infants—especially given the advances over the last decade that have allowed babies to be saved at earlier points in gestation.

Those advances have preserved the family dreams of parents like Jim and Tara Glandorf, who say that, without Duke, they would never have had the pleasure of watching their now-toddler twins giggle and grow.

"We have an opportunity to give a child who didn't have any chance a good life," division chief Goldberg says. "It's a very humbling experience. It's what motivates us. And it's hard to beat giving that to parents. The Talmud says that if you save a life, you save the universe. How exciting is that?"

For more information on Duke Neonatology, visit neonatology.mc.duke.edu. To read more from Dr. Goldstein on post-discharge care of preemies, visit dukemedmag.mc.duke.edu.

Staff reports contributed to this article.

Photos: Olivia (left) and Aiden Glandorf today

clinician q&a


Frank Gress, MD


Michael Feiler, MD

q: What are the current recommendations for treating gastroesophageal reflux disease?

a: Duke gastroenterologists Frank Gress and Michael Feiler reply:

GASTROESOPHAGEAL REFLUX disease, or GERD, generally occurs when the lower esophageal sphincter (LES) does not function properly, allowing stomach contents to leak back into the esophagus. GERD is one of the most common health conditions affecting Americans and the most expensive gastrointestinal disease in terms of health care dollars and time away from work—more than $10 billion in direct and indirect health care costs are attributable to this chronic disease.

Fortunately, lifestyle modifications and medications can relieve the symptoms of reflux. Patients with severe or refractory GERD may opt for open or laparoscopic surgery or a new endoscopic procedure, all of which address the source of the problem by strengthening the gastroesophageal sphincter.

SYMPTOMS

Typical symptoms of GERD include persistent heartburn (pyrosis) and acid regurgitation, which can usually be relieved by antacids. About 40 percent of Americans experience one or both symptoms at least once a month, and 20 percent experience them weekly. Some patients, however, present with atypical symptoms (such as chronic cough, asthma, noncardiac chest pain, and recurring laryngitis), whereas others have no symptoms at all. These symptoms, and particularly chest pain, often trigger a series of tests and medical visits to diagnose or rule out the disease.

Patients who have a history suggestive of uncomplicated GERD can be appropriately treated with an initial trial of empiric medication and lifestyle changes—a simple and cost-effective diagnostic test, although not optimally sensitive or specific. The treatment algorithm often includes a combination of antacids, H2 receptor antagonists (H2RA), the proton pump inhibitors, and the prokinetics, which help strengthen the sphincter and accelerate gastric emptying. Unresponsive symptoms, however, do not completely rule out GERD, and additional testing should be considered with these patients to exclude complications.

COMPLICATIONS OF GERD

The so-called alarm symptoms suggestive of complicated GERD include dysphagia (difficulty in swallowing), odynophagia (pain on swallowing), bleeding, weight loss, and anemia. Patients with alarm symptoms are more likely to have peptic strictures and esophagitis than those without such symptoms. Moreover, Barrett's esophagus—changes in the cells of the lower esophagus known as intestinal metaplasia—is three to six times more likely in patients who have had symptoms of GERD for more than a year. Although Barrett's esophagus does not cause symptoms, it can be a harbinger of esophageal adenocarcinoma, a rare but deadly cancer. A person with Barrett's esophagus has a one-in-200 chance per year of developing esophageal adenocarcinoma. Patients with Barrett's esophagus require periodic endoscopic surveillance.

DIAGNOSIS OF GERD

Because it permits evaluation and biopsy of the esophageal mucosa, endoscopy is the preferred procedure for diagnosing complications of GERD (and biopsy is the only reliable way to diagnose Barrett's esophagus). Typical symptoms in conjunction with endoscopic changes are 97 percent specific for the disease. Other diagnostic modalities include 24-hour pH monitoring (via a catheter passed through the nasal passage) or 48-hour wireless pH monitoring (with a gelcap-sized radiotelemetry pH sensor inserted into the lower esophageal mucosa) during endoscopy. Monitoring is useful in people with GERD symptoms and no esophageal damage, in those people whose symptoms persist despite acid-suppression therapy, and people whose respiratory symptoms (including wheezing and coughing) may be triggered by reflux.

MEDICAL THERAPIES

Acid suppression is the mainstay of therapy for GERD. Over-the-counter antacids are viable for milder GERD and short-term treatments as well as in conjunction with other therapies (including lifestyle changes). Of the available medical therapies, the proton pump inhibitors provide the best symptom control and esophagitis healing. However, some patients will do well on the less-intense H2RA-induced acid

GERD is one of the most common health conditions affecting Americans and the most expensive gastrointestinal disease in terms of health care dollars and time away from work.

suppression (although it's difficult to determine which patients will respond).

Promotility agents target the root causes of GERD—esophagogastric motility problems such as LES incompetence, poor esophageal clearance, and delayed gastric emptying. By correcting these problems, acid suppression theoretically would not be required. In reality, promotility agents have not been proven as effective monotherapy and have high side-effect profiles. They may, however, be used as an adjunct to acid-suppressive therapies.

INTERVENTIONAL TREATMENT OPTIONS

Open and laparoscopic surgery: Antireflux surgery is a maintenance option for the patient with well-documented GERD that is recalcitrant to medication and lifestyle changes as well as an alternative to a lifetime of drugs. The standard open Nissen fundoplication, developed by Dr. Rudolph Nissen in 1951, involves wrapping the upper part of the stomach around the lower esophageal sphincter to strengthen it, prevent acid reflux, and repair a hiatal hernia, if present. Typical symptoms are more likely to be relieved than atypical or supraesophageal symptoms.

The availability of laparoscopic Nissen fundoplication has increased patient acceptance, shortened the hospital stay, and reduced postoperative morbidity. One study found that laparoscopic fundoplication is as effective as open fundoplication in relieving heartburn and regurgitation, improving quality of life, and decreasing the use of antisecretory medications.

The procedures are not without risks and side effects, although many are self-limiting. Patients may have difficulty belching or experience bleeding or infection at the suture site. Less common risks include perforation of the esophagus, an accidental punching or tearing of the tissue, and reactions to anesthesia.

Endoscopy: Endoscopic procedures to reduce reflux symptoms generally involve the creation of a fold of tissue (a plication) that works to form an artificial barrier, much like the flap of muscle in the lower esophagus. Two companies currently produce FDA-approved devices that perform the plication technique known as endoluminal fundoplication—that is, placing sutures near the area of the LES from within the esophagus itself. One method involves placing a series of stitches in such a way as to tighten a weak or relaxed LES. The other device uses fewer stitches that actually form deeper plications. The procedure takes 30-40 minutes and is performed in the endoscopy suite with moderate sedation, not general anesthesia as is required with open or laparoscopic surgery. Most patients go home one to two hours after the treatment and resume normal activities the following day. A large hiatal hernia (> 2 cm) is a contraindication for this procedure, as is severe esophagitis.

Since endoscopic plication is a relatively new procedure, long-term data are not yet available. So far, however, it has a very good safety profile and provides significant relief of symptoms for 70 to 75 percent of patients. There is a steep learning curve involved in achieving proficiency in the procedure, so patients should select a gastroenterologist with considerable experience.

SUMMARY

Overall, most patients with GERD can be treated successfully with medication and lifestyle modifications. Those with refractory disease may benefit from more aggressive management options, including endoscopic plication or laparoscopic Nissen procedures. In addition, patients with long-term symptoms of GERD should be evaluated for the presence of Barrett's esophagus. Patients diagnosed with Barrett's esophagus are at an increased risk for esophageal cancer and need close observation.

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Genomics: Patience will pay off

by Susanne B. Haga, PhD, and Geoffrey S. Ginsburg, MD, PhD

AMERICANS ARE OFTEN characterized as an impatient group, desiring instant access, prompt service, and immediate response. Entire industries now cater to consumer demands for minimal wait times, promising next-day delivery, one-hour photos, or 30-day weight-loss programs. Our expectation of instant gratification has even spilled over into the scientific and medical research arenas—particularly in the field of genetics and genomics. A recent article in *Forbes* described genomic research as a "fizzle," pointing out that "of the hundreds of genes unearthed as purported links to either diseases or behavioral quirks, precious few have ever had that link confirmed," and concluding that "medicine's vaunted genomic era has yielded more murk than miracles."[1]

While it is true that many of the genomic "discoveries" trumpeted in headlines over the past 10 years have since been disproved—including claims of genes linked to longevity, male homosexuality, and heart attacks—it's a bit premature to conclude that the field is a success or failure. If success is defined as the development of new diagnostics and targeted treatments, particularly for complex diseases, we've admittedly made limited progress. But if success is defined as advancing knowledge about the sequence and structure of the human genome, variation between populations, comparison between species, and evolutionary biology, or by the creation of new industries, technologies, and fields of study such as biotechnology, high-throughput sequencing, and bioinformatics and proteomics, we have made remarkable strides. In fact, if one examines the accomplishments attained in the field's short lifespan, they're awe-inspiring—and a harbinger of exciting applications to come.

GREAT EXPECTATIONS

The field of genomics was essentially kick-started by the Human Genome Project in 1990. An unprecedented undertaking, the project aimed to sequence the entire human genome, plus the genomes of five other species, by 2005. In hindsight, that goal turned out to be extremely conservative. By 2005, the genomes of 99 organisms, including human, had been sequenced.

Much of this achievement was due to advances in sequencing technologies. Over the past decade, the cost of sequencing has dropped more than 50-fold to less than $1 per 1000 bases. Even so, efforts continue to reduce the price even further to the targeted goal of $1000 per human genome—a figure quite comparable to the cost of some current clinical tests. Once this goal is achieved, the futuristic scenario of patients having their genomes sequenced in full and stored on a card or chip will edge closer to reality.

While these achievements are impressive, the question remains: How do we translate such advances into meaningful clinical applications? Elucidating the genetics behind common diseases has proven challenging, since multiple combinations of genetic variants and environmental factors can result in similar disease phenotypes. As geneticists began searching for any hint of an association between a particular gene and phenotype, thousands of studies linking a particular genetic variant with a disease or trait were published, but most of these findings have not been reproduced and validated.

However, the mistakes of early studies were soon recognized—poor study design, population stratification, problems with data analysis, inaccurate definition and/or measurement of phenotype, and lack of consideration of confounding non-genetic variables. As a result, scientists are now designing more robust and rigorous studies—ultimately yielding reproducible findings.

BETTER STUDIES

Second-generation genomic studies got a boost from a greater understanding of the pattern of genetic variation as a result of the HapMap project. About 10 million genetic variants are believed to exist, creating a challenging task for scientists to determine which are associated with disease. Fortunately, genetic variants, a.k.a. single nucleotide polymorphisms (SNPs), located within a stretch of sequence are often inherited together as a unit, known as a haplotype. To facilitate the identi-

"Accomplishments to date have already surpassed the expectations of the visionaries of the field, and progress toward the era of genomics-based personalized medicine is made daily as the vast terrain of the genome is explored, gene by gene."

fication of disease-related variants, the first phase of the HapMap project generated a map of 1 million common genetic variants. By understanding the haplotype patterns, scientists can scan the genome by using a single SNP representative of each haplotype—a much more manageable task than using the 10 million total SNPs. Using this approach, current scans of the genome are more efficient and complete.

As just one example, several research teams have used the whole genome scanning approach to identify a gene known as complement factor H which was found to account for about 50 percent of cases of age-related macular degeneration (AMD). Understanding how this gene is involved in the pathophysiology of AMD may lead to discovery of disease pathways and environmental triggers, which in turn could lead to the development of predictive tests and therapeutic targets. In another recent study, Icelandic researchers discovered a gene that accounts for 20 percent of cases of type II diabetes. Individuals who carry one copy of a particular variant within this gene have a 45 percent increased risk of the disease. Clues to the location of this gene were obtained through a genome-wide scan of more than 700 diabetic patients and relatives.

In addition to new sequencing technologies, microarrays or "chips" have revolutionized the field with their capacity to assay thousands of genes in a single experiment. Microarrays can be used to not only detect sequence variations, but also to measure RNA or expression patterns. The analysis of expression patterns has allowed disease classification not previously possible.

In 1999, scientists at MIT identified a set of 50 genes out of 6,817 surveyed that could distinguish between acute myeloid leukemia and acute lymphoblastic leukemia. Since that time, unique gene expression patterns have been demonstrated to predict survival, clinical outcome, and response to chemotherapy. For example, a non-invasive molecular expression profile can be used to categorize heart transplant patients into low- and high-risk categories for cardiac rejection before clinical symptoms appear. Duke researchers have identified distinct expression profiles useful in guiding treatment decisions for patients with certain types of cancer. A number of these gene expression profiles are or will soon be commercially available, including one currently under development at Duke which aims to predict disease recurrence in stage Ia non-small cell lung cancer patients.

APPLICATIONS AROUND THE CORNER

In 2002, the Duke Institute for Genome Sciences & Policy (IGSP) was created to promote an interdisciplinary approach to the comprehensive study of biology and health through analysis of the genome, transcriptome, proteome, metabolome, and new '-omes' yet to be defined. With more than 200 faculty and staff and partners across Duke, industry, and government, the IGSP is positioned to make a profound contribution to the advancement of genome sciences and development of new clinical applications.

The sequencing of the human genome was completed only five years ago. Considering that it takes an average of eight to 12 years just to bring a new drug to market, the field of genomics certainly has some time to prove its worth. The accomplishments to date have already surpassed the expectations of the visionaries of the field, and progress toward the era of genomics-based personalized medicine is made daily as the vast terrain of the genome is explored, gene by gene. The foundation for change has been laid; now we just have to prepare for its arrival.

Susanne B. Haga, PhD, is a senior policy analyst with the Institute for Genome Sciences & Policy at Duke. Geoffrey S. Ginsburg, MD, PhD, is the director of the Center for Genomic Medicine at the Institute for Genome Sciences & Policy.

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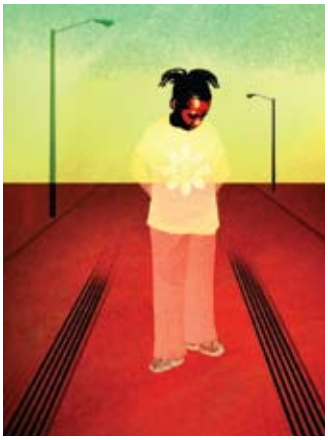
Gifts from individuals and organizations are the largest source of non-government support for Duke's research, education, patient care, and service missions. Here are some recent examples of philanthropic partnerships that will make a difference to human health for generations to come. **To learn more about how you can support medical education, research, and patient care at Duke, please call 919-667-2500 or visit development.mc.duke.edu.**

Grants to help child victims of domestic violence

"This project targets children who are most at risk for long-term behavioral and psychological problems. Domestic violence shelters focus on the immediate needs of adult victims, but most lack personnel who are trained to deal with the unique and often hidden needs of children."

—Ruth Dzau, member, Board of Directors, CCFH



A YEARLONG PROJECT to help children who are the victims of domestic violence and living in shelters will soon begin, thanks to grants from The Duke Endowment and the Z. Smith Reynolds Foundation.

The program is designed to screen and treat the children for post-traumatic stress and implement best practices for shelter-based care. The Center for Child and Family Health – North Carolina (CCFH) will oversee the project, which received **$200,000** from The Duke Endowment and **$100,000** from the Z. Smith Reynolds Foundation. Founded in 1996, the center is a collaboration among Duke, North Carolina Central University, and the University of North Carolina at Chapel Hill, and Child & Parent Support Services, a United Way agency.

Mary T. Champagne, PhD, RN, chair of the center's university board of directors, said the project will enable the center to generate a model for use in shelters statewide and nationally.

The effort will start with pilot projects at six domestic violence shelters—one each in Caldwell, Guilford, Halifax, Robeson, Vance, and Wilson counties. The project will support the coordination of training, evaluation, and policy advocacy to develop a "toolbox" that can be replicated at the more than 90 North Carolina domestic violence shelters that receive state support and provide care for more than 8,000 child shelter residents each year.

Although a select minority of North Carolina domestic violence shelters provide a degree of child-focused service, state funds do not require programs to design services for children, and existing programs vary widely in terms of capacity and quality, according to Robert A. Murphy, PhD, executive director of CCFH and an associate clinical professor at Duke.

CCFH is a member of the 45-site National Child Traumatic Stress Network and the only agency in North Carolina focused exclusively on the needs of traumatized children. Each year, the center serves more than 3,300 children and family members from 45 to 50 different urban and rural North Carolina counties as well as from other states.

A gift of thanks

In gratitude for friends who have been helped at Duke University Medical Center, John Laurino of Wilmington, North Carolina, has given two charitable gift annuities valued at approximately **$1.5 million**. The donations, which are called life income gifts, will pay Laurino an annuity for his lifetime. Upon his passing, the gifts will be used as follows: Nearly half will go towards breast cancer research and related initiatives of radiation oncologist Lawrence Marks, MD. Another 47 percent is designated for resident training in the Department of Surgery, and the balance is directed to the Department of Ophthalmology. "The doctors and other staff members I've met at Duke have been great. They are so helpful," says Laurino. One employee in particular—Cecil Wallace, a director in Duke's Private Diagnostic Clinic—went beyond the call of duty in helping a friend of Laurino's. "Mr. Wallace is one of the main reasons I'm giving to Duke," Laurino says.

Race horse sale a win for children

Kenneth T. Jones Jr. of Domino Stud Farm in Lexington, Kentucky, has donated the proceeds from the sale of a thoroughbred race horse named "Helping Hands" to Duke Children's Hospital. The nearly **$300,000** generated by the sale of "Helping Hands" will support the work of Gordon Worley, MD, in neurodevelopmental pediatrics. Worley specializes in managing medical problems of children with spina bifida, cerebral palsy, head trauma, Down syndrome, spinal cord injury, and failure-to-thrive. Jones also has established the Jones and Guerrero Company, Inc., Endowment Fund to support research, teaching, and care for children with myelodysplasia and similar chronic disorders and the Kenneth T. Jones Jr. and Elaine C. Jones Endowment Fund to provide unrestricted support to the Division of Urology.

KBR grant helps vulnerable teens

The Kate B. Reynolds Charitable Trust has given **$342,429** to Duke's Department of Community and Family Medicine to provide prenatal care, mental health services, and education on sexually transmitted diseases (STDs) to teens at two Durham high schools. Called ACCESS (Adolescent Centered Care, Education, and Social Services), the program is a highly personalized and stable system of medical, mental health, and social services for pregnant and parenting adolescents at Southern and Hillside high schools. It aims to decrease repeat pregnancies and rates of STDs, increase the number of adolescents receiving prenatal care, and improve their physical and mental health and the health and safety of their babies.

Bequest establishes medical scholarship

The late Daniel J. Pachman, MD'35 (above), and his wife Vivian Allison chose to memorialize their lifelong commitment to Duke with a gift of **$533,244** from their estate to establish The Vivian Allison and Daniel J. Pachman, MD Scholarship Fund. It will provide whole or partial scholarships to Duke medical students. "Duke was always on my father's mind," says Grace Allison, one of Pachman's daughters, "whether interviewing potential medical students, thinking of gifts, or working in the earlier years in Duke Pediatrics." The Pachmans also had a special relationship with Dean Wilburt C. Davison, MD, and his wife. "My parents lived with the Davisons when my sister was on the way," Allison says. "Dean Davison and his wife were very dear to them."

Alum honors St. Geme

As a way to honor her friend Joseph W. St. Geme Jr., MD, Beverly Carver Morgan, MD'55, has given **$500,000** to establish a pediatric infectious disease research fund in his name. Expenditures will be made at the discretion of the chair of the Department of Pediatrics. Currently serving in that position is St. Geme's son, Joseph W. St. Geme III, MD.

"[Dr. St. Geme Jr.] was an extremely dynamic person, a very distinguished man, and was president of virtually every major pediatric organization in the United States," Morgan says. "He did it all. I got to know Joe and his wife, Monica, very well." Morgan, who in 1992 gave $1 million to establish the Beverly C. Morgan Professorship in Pediatric Cardiology at Duke, said she knew she wanted to give more as soon as she learned that their son Joseph III had been named chair of the Department of Pediatrics. "He is very much like his father in looks, mannerisms, intelligence, and leadership," she says.

APPOINTMENTS

State leader joins Duke

Gwynn T. Swinson, a cabinet secretary of North Carolina Governor Mike Easley and the state's chief administrative officer, was appointed as a new vice president of government and community affairs and external relations at Duke University Health System in January. Swinson had served Easley since 2001 as secretary for the Department of Administration, and is also a former associate dean of Duke Law School.

"Gwynn is an experienced leader and administrator. She combines the analytical skills of the trained lawyer she is with compassion and understanding of the issues affecting the health care needs of people. Her excellent record of service for Governor Easley on some of the challenging issues facing state government and her knowledge of Duke from her previous work here make her ideally suited to help us shape the future of Duke Medicine," says Victor J. Dzau, MD, chancellor for health affairs at Duke and president and CEO of Duke University Health System.

Dzau said Swinson will be part of "our senior strategy team," providing Duke Medicine—including the schools of Medicine and Nursing and the Duke University Health System—with strategic leadership in the planning, direction, and execution of effective programs to ensure positive and productive relationships with federal, state, and local government officials, community leaders and organizations, and various external audiences.

In her positions with Governor Easley, Swinson was responsible for a departmental budget of $136 million annually, with 750 employees. She provided oversight to many areas of state government, including construction, real property, facility management, motor fleet, parking and mail services, and advocacy programs for human relations, youth advocacy, women/domestic violence, and numerous other concerns.

"I am very pleased and honored to join one of this country's esteemed medical institutions and to be a part of Duke's future as it advocates for patients locally, regionally, nationally, and across the globe," says Swinson. "I am looking forward to returning to Duke and to working with the talented team of leaders at the university and health system."

New directions in Raleigh

Vinsel

Doug Vinsel was named the new chief executive officer of Duke Health Raleigh Hospital (DHRH) in January. Vinsel comes to DHRH from WakeMed Health and Hospitals, where he served as chief operating officer and executive vice president since 1984.

"Doug is an experienced leader who has a tremendous understanding of the issues that impact health care in the region and the needs of the individuals we serve," says Victor J. Dzau, MD, chancellor for health affairs at Duke and president and CEO of Duke University Health System. "He has a proven record of operational excellence and a reputation of successful collaboration with our community physicians that we view as essential elements to the successful delivery of services in greater Wake County."

"I am excited by Dr. Dzau's vision of expanding Duke's presence in this region," says Vinsel. "As the population in our area grows, I look forward to working with our talented hospital staff, health system leadership, and our local medical community to guide the development and expansion of health care services in Wake County."

Gannotta

In April, Vinsel announced the appointment of **Richard Gannotta** as chief operating officer of DHRH. Gannotta is a former senior vice president and administrator at WakeMed Raleigh Campus, with prior titles of senior vice president of operations and patient care and vice president of operations. With more than 20 years' experience in health care, his numerous accomplishments include the development and expansion of an acclaimed heart program, nursing executive council, and critical care intensivist program. He has also directed growth in key service areas including emergency services, surgical services, and technology development.

"I know Rick to be an individual of great leadership, mentorship, and program development and am pleased to have the opportunity to work with him again," says Vinsel.

Taking a seat pro tempore

Harvey Jay Cohen, MD, was named interim chair of the Department of Medicine at Duke in February. His appointment followed the announcement that chair Pascal J. Goldschmidt, MD, had accepted the position of senior vice president of medical affairs and dean of the University of Miami Leonard M. Miller School of Medicine.

Cohen's appointment was announced by Victor J. Dzau, MD, chancellor for health affairs, and R. Sanders Williams, MD, dean of the School of Medicine. The pair also announced that discussions will begin immediately with the department to outline the search process for a new chair.

"We are very fortunate to have in Dr. Cohen a highly respected leader who is able to guide the Department of Medicine at this time of transition," says Dzau. "In addition to his clinical and scientific achievements, Harvey is a gifted teacher who is revered by students, residents, and faculty across the medical school."

Cohen has served as vice chair of the Department of Medicine for faculty development and academic affairs since 2003. He helped to establish Duke's Division of Geriatric Medicine in the 1970s and was the architect of Duke's renowned fellowship program in geriatric medicine. He is a professor of medicine and chief of the Division of Geriatric Medicine, as well as director of Duke's Center for the Study of Aging and Human Development. He also directs the Geriatric Research, Education, and Clinical Center at the Durham Veterans Administration Medical Center.

Brown becomes admin VP

Monte D. Brown, MD, has been named vice president of administration for Duke University Health System and associate dean of veterans affairs for the School of Medicine. Brown has been serving as COO of the Private Diagnostic Clinic and the health system and medical school representative to the Durham Veterans Administration Medical Center since 2005. Before coming to Duke, Brown spent eight years on the faculty of Harvard Medical School and served as vice chairman of the Department of Medicine at Brigham and Women's Hospital, Boston.

In his new positions, Brown will play a key role in implementing the health system strategic plan and coordinating with the university about the health system's parking needs. Brown also will assume responsibility for facilities, architecture, occupational safety, and crisis management.

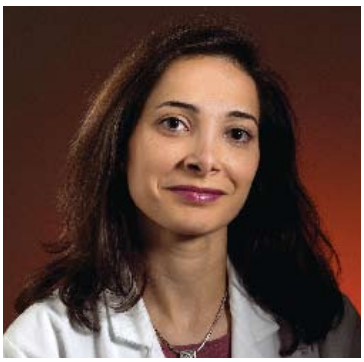
"Given Dr. Brown's track record of leadership, we're certain he will make important contributions in making our health system more efficient and patient-centric," says Dzau.

Three times a leader

Gordon Williams is taking on a new role within the Duke University School of Medicine, now serving as executive vice dean, chief operating officer, and vice chancellor for operations.

"In this capacity, Gordon has a higher level of decision-making authority over all basic operations of the school, in effect representing me in dealing with all issues that concern operational management," says R. Sanders Williams, MD, dean of the school.

"With projects such as financial redesign and the strategic plan coming forward, this is an opportunity to improve the service that the dean's office gives to our faculty," says Gordon Williams. "We are not adding this position as an extra layer of decision-making, but in order to streamline decision-making. I intend to be highly accessible to our faculty, who are the driving force of the School of Medicine."


Sana Al-Khatib, MD


Ramon M. Esclamado, MD


Dorothy Powell, EdD, RN, FAAN


Homme Hellinga, PhD

Studying sudden cardiac death

Sana Al-Khatib, MD, assistant professor in cardiology, and **Gillian Sanders, PhD**, medical decision analyst at the Duke Clinical Research Institute, have been appointed co-directors of the newly created Duke Center for the Prevention of Sudden Cardiac Death. The Center was created in part to raise the visibility of sudden cardiac death among the general public, policymakers, and the medical community; investigate who is most likely to suffer from a sudden cardiac event; and develop strategies for preventing its occurrence in at-risk patients. Sudden cardiac death is the most common cause of death in this country.

Head, neck, and shoulders above

Ramon M. Esclamado, MD, joined Duke University Medical Center as chief of otolaryngology in January. The announcement was made by Duke surgery chairman Danny O. Jacobs, MD, MPH.

Esclamado comes to Duke from the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, where he served as professor of surgery, vice chairman of the Head and Neck Institute of the Cleveland Clinic, and head of the section of head and neck surgery. Esclamado has 16 years' experience in the education and training of resident physicians in all aspects of head and neck surgery and is known for his expertise in the care and management of patients with benign and malignant tumors of the head and neck.

Addressing health disparities

Dorothy L. Powell, EdD, RN, FAAN, has accepted the position of director of the Office of Global and Community Health Initiatives (OGACHI) at Duke University School of Nursing. OGACHI was created in support of Duke Global Health, a university-wide campaign to improve the care of local, regional, and global vulnerable populations. Powell served as dean and associate dean of nursing education at Howard University in Washington, D.C. for 18 years before joining the faculty at Duke.

Building blocks of science

The schools of Medicine and Arts and Sciences have created a new multidisciplinary institute—The Institute of Biological Structure and Design. Directed by **Homme Hellinga, PhD**, professor of biochemistry and National Institutes of Health Pioneer awardee, the institute will focus on unveiling the structures of molecules, proteins, and biological systems to determine how they function so that these living building blocks might be manipulated to create new, biomedically relevant structures.

The institute will have three centers:

- **Center for Structural Biology**, directed by **Lorena Beese, PhD**, professor of biochemistry
- **Center for Chemical Biology**, directed by **Eric J. Toone, PhD**, professor of chemistry
- **Center for Synthetic Biology**, director yet to be named

The official launch of the institute is likely to be in spring 2007.

Bioinformatics leader

The Duke Comprehensive Cancer Center (DCCC) and the Duke Institute for Genome Sciences & Policy recently partnered to create the Duke Bioinformatics Group (DBIG). The intended audience for DBIG collaboration and service includes Duke researchers who have bioinformatics projects relevant to medicine and improving human health. **A. Jamie Cuticchia Jr., PhD**, has been named director of DBIG. He has over 20 years of academic and industry experience leading groups in computational biology, genomics, high-performance computing, software engineering, and genome database construction.

Appointments in Singapore

The Duke-NUS Graduate Medical School Singapore (GMS), a collaboration of Duke University School of Medicine and the National University of Singapore, recently announced the following appointments:

- **Robert K. Kamei, MD**, has been appointed vice dean for medical education.
- **Charles Frank Starmer Jr., PhD**, has been appointed associate dean for learning technologies.
- **Mariano Garcia-Blanco, MD, PhD**, professor of molecular genetics and microbiology and of medicine at Duke, will spend approximately two months per year in Singapore.
- **Tih-Shih Lee, PhD**, has accepted a faculty appointment as associate professor in the Department of Psychiatry and Behavioral Sciences.

The Singapore government is making a significant investment over seven years to establish the GMS as part of a national strategy to become a leading center for medical research and education. Led by Dean R. Sanders Williams, MD, the GMS will enroll its first class in 2007.

Vice dean, past & present

Sally Kornbluth, PhD, professor and vice chair of the Department of Pharmacology and Cancer Biology, will become vice dean for basic sciences at the School of Medicine July 1. Kornbluth joined Duke in 1994 after earning her PhD from The Rockefeller University, and doing postdoctoral work at both Rockefeller and the University of California-San Diego.

She succeeds **Jo Rae Wright, PhD**, a cell biologist and physiologist who served since 2002. Wright has been named dean of the Graduate School and vice provost, effective July 1. She is noted for developing programs for graduate and post-doctoral students to develop skills beyond their research training. Twice, students have honored her with the Excellence in Basic Science Teaching Award at Duke.

New marketing maven

Kathleen DeVries, MBA, has been appointed to a new position of assistant vice president for Duke University Health System marketing. In this position, she will oversee marketing across the health system. DeVries comes to Duke from Froedtert Health System, an academic medical center associated with the Medical College of Wisconsin. She received her BA in political science and mass communication and an MBA from the University of Wisconsin-Milwaukee.

New leader for licensing and ventures

As part of a new focus on technology transfer at Duke, **Rose Ritts, PhD**, has been named director of the newly named Office of Licensing and Ventures (OLV). The office—formerly the Office of Technology Licensing and Venture Development—is budgeted to more than double in size under Ritts's leadership.

"OLV is the bridge between Duke innovators and the industrial and venture partners needed to bring new discoveries and technologies to where they can really impact people and society," says Ritts.

A major feature of Ritts's approach will be to treat both Duke inventors and outside partners as customers. For faculty, this method will mean proactive interaction and a rapid response—within a few months—to faculty submitting their discoveries for patenting consideration. The office will help faculty assess whether the most appropriate route to commercialization is licensing their discoveries or creating a startup company.

Mariano Garcia-Blanco, MD, PhD

Sally Kornbluth, PhD

Kathleen DeVries

Rose Ritts, PhD

Huntington Willard, PhD, received $1 million for undergraduate education in genomics.

Leon Herndon, MD, received a humanitarian award for work in the Dominican Republic.

Christian R.H. Raetz, MD, PhD, was elected to the National Academy of Sciences.

Lloyd Michener, MD, serves as the 2006 President of the Council of Academic Societies.

Huntington Willard, PhD, director of the Duke Institute for Genome Sciences & Policy (IGSP), has been named a Howard Hughes Medical Institute (HHMI) professor. He is one of 20 scientists selected in a national competition to receive $1 million each to support activities to improve undergraduate science education. Willard will use the HHMI funding to create and support programs to expand research opportunities for Duke undergraduates in the study of genomes.

Leon Herndon, MD, glaucoma specialist and medical director at the Duke Eye Center, was presented the Dedicated Humanitarian Service Award by the office of the president of the Dominican Republic in January. Last year, Herndon was a leader in organizing an ophthalmology screening sponsored by the office of the First Lady of the Dominican Republic, Lions Club International, and the Presidential Commission on Millennium Development goals. More than 6,500 individuals were screened and/or treated by 150 volunteers and physicians.

Christian R.H. Raetz, MD, PhD, George Barth Geller Professor for Research in Molecular Biology and chairman of the Department of Biochemistry, has been elected to the National Academy of Sciences. Raetz, internationally recognized for his research into bacterial and animal lipids, has made discoveries about lipid pathways and bacterial growth that could lead to the treatment of drug-resistant bacteria. He was one of 72 new members chosen by the Academy, which serves as an official adviser to the federal government in matters of science and technology.

The Association of American Physicians (AAP) has elected three researchers from the Duke University School of Medicine to the organization's membership. **Joseph Heitman, MD, PhD**, James B. Duke Professor of Molecular Genetics and Microbiology, **Nelson Chao, MD**, professor of medicine and immunology, and **Howard Rockman, MD**, professor of medicine and molecular genetics and microbiology, received the honor in April. With their election, 32 Duke faculty members are members of AAP.

James A. Tulsky, MD, director of the Duke Center for Palliative Care and professor of medicine and nursing at Duke, received the 2006 Award for Excellence in Scientific Research from the American Academy of Hospice and Palliative Medicine (AAHPM). The award recognizes meaningful, exemplary research contributions to the field of hospice and palliative care. Tulsky received the award and gave a lecture at the organization's annual assembly in February.

Lloyd Michener, MD, chair of the Department of Community and Family Medicine, is serving as the 2006 President of the Council of Academic Societies (CAS), one of three governing councils of the Association of American Medical Colleges. He is the first family practitioner ever elected to fill the position. The CAS represents the faculty leadership of United States medical schools and teaching hospitals through representation from 94 member professional organizations.

Christopher Newgard, PhD, director of the Sarah W. Stedman Nutrition and Metabolism Center, received a $500,000 grant from the Bristol-Myers Squibb Foundation Freedom to Discover program. The unrestricted grant supports Newgard's research to better understand obesity and diabetes by studying mechanisms of metabolic regulation in the liver and pancreatic beta cells. Newgard and his colleagues hope to develop new therapeutic strategies by investigating metabolic signatures of obesity and related metabolic diseases.

The American Urological Association (AUA) has selected **Glenn M. Preminger, MD**, professor of surgery in the Duke Division of Urology, as the next chairman of the AUA Office of Education. Preminger will be responsible for the strategic direction of AUA education programs as well as the quality and medical accuracy of all educational offerings of the 14,500 member association. He will assume this role on July 1 for a term of four years.

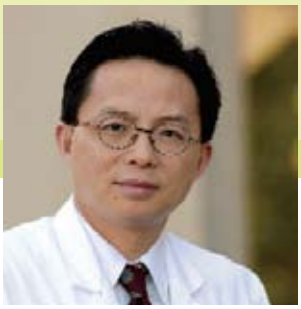
Mary Ann Fuchs, MSN, RN, chief nursing and patient care services officer for Duke University Hospital and Duke University Health System, has been elected as the nurse administrator (hospital/health system) representative member of the North Carolina Board of Nursing. The board's primary purposes are to educate and consult, serve as a resource, set standards, promulgate and interpret rules, license and discipline nurses, and develop standards for the evolving legal scope of nursing practice within the state.

Duke University in May awarded distinguished professorships to eight faculty members from the School of Medicine and two from the School of Nursing:

- **Peter C. Agre, MD**, James B. Duke Professor of Cell Biology

Christopher Newgard, PhD, received a $500,000 grant from Bristol-Myers Squibb's Freedom to Discover program.

Mary Ann Fuchs, MSN, RN, was elected to the North Carolina Board of Nursing.



Yiping Yang, MD, PhD, received a $1 million research award from the Alliance for Cancer Gene Therapy.

Jo Rae Wright, PhD, received a lifetime achievement award from the American Physiological Society.

- **Lorena S. Beese, PhD**, James B. Duke Professor of Biochemistry
- **G. Ralph Corey, MD**, Gary Hock Professor of Global Health
- **Scott Cousins, MD**, Robert Machemer, MD Professor of Ophthalmology
- **Ronald Goldberg, MD**, Dorothy J. Shaad/Angus M. McBryde Sr. Professor
- **Farshid Guilak, PhD**, Lazlo Ormandy Professor of Orthopaedic Surgery
- **Thomas Petes, PhD**, Minnie Geller Professor for Research in Genetics
- **Dennis Thiele, PhD**, George Barth Geller Professor of Pharmacology
- **Elizabeth C. Clipp, PhD, RN**, Bessie Baker Professor of Nursing
- **Linda L. Davis, PhD, RN**, Ann Henshaw Gardiner Professor of Nursing

The awards in the School of Nursing marked the first-ever university distinguished professorships in the school's history.

Andrew Berchuck, MD, co-leader of the Duke Comprehensive Cancer Center's Breast and Ovarian Oncology Research Program, was selected as the first recipient of the American Cancer Society's Barbara Thomason Ovarian Cancer Professorship. He will receive $100,000 a year for five years to continue his research on the genetics of ovarian cancer.

Victor J. Dzau, MD, chancellor for health affairs, received the prestigious Robert H. Williams, MD Award from the Association of Professors of Medicine. It is given to a distinguished physician who has demonstrated outstanding leadership as a current or former chair of a department of internal medicine.

Dzau was also presented with the 2006 International Academy of Cardiovascular Sciences Medal of Merit, the academy's highest honor, for his work in cardiovascular translational research, including studies of the molecular and genetic mechanisms of cardiovascular disease and applied genomic and gene transfer technologies to develop novel therapeutic approaches.

The American Association of Critical-Care Nurses (AACN) has recognized the **Cardiac Care Unit at Duke University Hospital** for excellent critical care. The unit was one of only 12 in the country to win the association's prestigious Beacon Award for Critical Care Excellence for 2005 and the first unit ever in the state of North Carolina to win the award.

Duke Comprehensive Cancer Center member **Yiping Yang, MD, PhD,** was recently awarded a five-year, $1 million Investigator Award for Lymphoma and Leukemia from the Alliance for Cancer Gene Therapy. Yang, an assistant professor of medicine and immunology at Duke, was awarded the grant for his work on "The Role of Innate Immunity in Active Immunotherapy for Lymphoma."

David A. Rizzieri, MD, associate professor of medicine and member of the Duke Comprehensive Cancer Center, recently received the Scholar in Clinical Research award from the Leukemia & Lymphoma Society.

The award provides Rizzieri $110,000 a year for five years to further his research of allogeneic hematopoietic transplantation.

Three Duke University Medical Center faculty members were honored at this year's annual meeting of the American Physiological Society (APS).

- **Jo Rae Wright, PhD**, professor of cell biology, received the Walter B. Cannon Award for lifetime achievement from the APS. Wright was among 16 scientists from around the world tapped for top awards by the APS this year.
- **Thomas Coffman, MD**, chief of the Division of Nephrology and James R. Clapp Professor of Medicine at Duke, received a distinguished lectureship in the APS Water and Electrolyte Homeostasis section of the conference.
- **Anthony Means, PhD**, Nanaline H. Duke Professor and chair of the Department of Pharmacology and Cancer Biology, received the ASPET (American Society for Pharmacology and Experimental Therapeutics) Goodman and Gilman Award in Receptor Pharmacology in recognition of lifetime achievement in receptor research.

Guoping Feng, MD, assistant professor in the Departments of Neurobiology and Pathology and the current Ruth K. Broad Scholar in the Neurosciences, is one of five scientists to receive a McKnight Endowment Fund Neuroscience of Brain Disorders Award. He will receive $300,000 over three years for research aimed at diagnosing, preventing, and treating injuries or diseases of the brain or spinal cord.

COMMUNITY AND FAMILY MEDICINE

Lauren P. Johnson, MD
Particular Clinical Interests and Skills: Student and women's health with particular emphasis on patient education and the involvement of patients in their own health care
Faculty Rank: Clinical Associate
Division: Student Health
MD Degree: University of North Carolina at Chapel Hill School of Medicine, 1993
Residency: Family Practice, Maine Medical Center Family Practice, 1993-1996

Karyn W. Rahn, MD
Particular Clinical Interests and Skills: Non-operative back and spine care, short-term pain management, operative vs. non-operative triage, evaluation for steroid injections, back/spine injury prevention/rehabilitation
Faculty Rank: Clinical Associate
Division: Occupational Medicine
MD Degree: Duke University School of Medicine, 1999
Residency: General Surgery, Duke University Medical Center, 2002-2003
Fellowship: Occupational Medicine, Duke University Medical Center, 2004-2005
Other: Master of Environmental Management, Nicholas School of the Environment, Duke University, 1995

MEDICINE

Lynn A. Bowlby, MD
Medical Director, Duke Outpatient Clinic
Particular Clinical Interests and Skills: General medical care for chronic and acute disease in adults, medical problems of pregnancy
Faculty Rank: Assistant Clinical Professor
Division: General Internal Medicine
MD Degree: Tufts University School of Medicine, Massachusetts, 1991
Residency: General Internal Medicine, Rhode Island Hospital, 1991-1994

Ambrose A. Chiang, MD
Particular Clinical Interests and Skills: Sleep disordered breathing, obstructive sleep apnea, central sleep apnea, Cheyne-Stokes respiration, obesity-associated breathing abnormality, obesity hypoventilation syndrome, hypoventilation due to other medical illness, upper airway resistance syndrome, other sleep disorders
Faculty Rank: Associate Clinical Professor
Division: Pulmonary, Allergy and Critical Care
MD Degree: Taipei Medical University, Taiwan, 1981
Residency: Medicine, Cook County Hospital, Illinois, 1984-1987
Fellowship: Respiratory and Critical Care Medicine, Duke University Medical Center, 1987-1991

Anna Lisa C. Crowley, MD
Particular Clinical Interests and Skills: Non-invasive cardiovascular imaging, research focus on the best way to non-invasively diagnose and prognosticate patients with a variety of cardiovascular diseases
Faculty Rank: Associate
Division: Cardiology
MD Degree: The Ohio State University College of Medicine, 1998
Residency: Internal Medicine, Duke University Medical Center, 2001
Fellowship: Cardiovascular Disease, Duke University Medical Center, 2005

D. Allen Hayes, MD
Particular Clinical Interests and Skills: COPD, asthma, lung cancer, interstitial lung disease, sarcoidosis, sleep apnea, occupational lung diseases
Faculty Rank: Consulting Associate
Division: Pulmonary, Allergy and Critical Care
MD Degree: University of Virginia School of Medicine, 1972
Residency: Internal Medicine, University of Michigan, 1972-1975
Fellowship: Pulmonary Medicine, University of North Carolina at Chapel Hill, 1977-1979

Ted R. Kunstling, MD
Particular Clinical Interests and Skills: Dyspnea, cough, chronic obstructive lung disease, asthma, interstitial lung disease, sarcoidosis, occupational lung diseases, pleural disease
Faculty Rank: Clinical Associate
Division: Pulmonary, Allergy and Critical Care
MD Degree: Duke University School of Medicine, 1968
Residency: Internal Medicine, Vanderbilt University Medical Center, Tennessee, 1968-1970, 1972-1973
Fellowship: Pulmonary Diseases, Vanderbilt University Medical Center, Tennessee, 1973-1975

Lillian F. Lien, MD
Particular Clinical Interests and Skills: Obesity and metabolism adipocytokine physiology, metabolic syndrome, diabetes mellitus, intravenous insulin
Faculty Rank: Assistant Professor
Division: Endocrinology, Metabolism, and Nutrition
MD Degree: Duke University School of Medicine, 1999
Residency: Internal Medicine, Duke University Medical Center, North Carolina, 1999-2002
Fellowship: Endocrinology, Metabolism, and Nutrition, Duke University Medical Center, 2002-2005

Neal E. Ready, MD, PhD
Particular Clinical Interests and Skills: Treatment of patients with lung cancer and head and neck cancers, active in multimodality treatment, clinical trial development and translational research
Faculty Rank: Assistant Professor
Division: Medical Oncology
MD Degree: Vanderbilt University Medical School, Tennessee, 1986
Residency: Internal Medicine, Rhode Island Hospital, Brown University Medical School, 1986-1989
Fellowship: Hematology, Brown University Medical School, Rhode Island, 1990-1992
Medical Oncology, New England Medical Center, Tufts University Medical School, Massachusetts
Other: PhD, Biology, University of California at Irvine, 1982

PEDIATRICS AND INTERNAL MEDICINE

Dean S. Miner, MD
Particular Clinical Interests and Skills: Ongoing interest in palliative care medicine, as well as in clinical genetics and house-staff education
Faculty Rank: Assistant Professor
Division: Pediatrics and Internal Medicine
MD Degree: University of Florida College of Medicine, 1993
Residency: Internal Medicine and Pediatrics, Baylor College of Medicine, Texas, 1997

To make an appointment with a Duke physician, call 1-888-ASK-DUKE (275-3853). Physicians call 1-800-MED-DUKE (633-3853)

SURGERY

Joshua S. Broder, MD
Particular Clinical Interests and Skills: Emergency medicine imaging, clinical decision rules, patient safety, and emergency medical education
Faculty Rank: Assistant Clinical Professor
Division: Emergency Medicine
MD Degree: Yale University School of Medicine, Connecticut, 1999
Residency: Emergency Medicine, University of Maryland, 1999-2002

Carlos E. Marroquin, MD
Particular Clinical Interests and Skills: Transplant, hepatobiliary surgery and antireflux surgery; special interest in laparoscopic focus of general surgery
Faculty Rank: Assistant Professor
Division: General Surgery
MD Degree: Geffen School of Medicine at UCLA/Drew University of Medicine and Science, California, 1994
Residency: General Surgery, Georgetown University, Washington, DC, 2002
Fellowship: Surgical Oncology and Immunotherapy Fellowship, National Cancer Institute, National Institutes of Health, Maryland, 1999 Abdominal Transplant Fellowship, Duke University Medical Center, 2004

Douglas W. Schreyack, DPM
Particular Clinical Interests and Skills: Surgical correction of bunion deformities and degenerative arthritis of the great toe joint, treatment of heel/arch pain, ingrown toenails, hammertoe deformities
Faculty Rank: Clinical Associate
Division: Orthopaedic Surgery/Podiatry
Degree: Doctor of Podiatric Medicine (DPM), Dr. Scholl College of Podiatric Medicine, Illinois, 1991
Residency: Podiatric Surgery, Baptist Memorial Hospital, Tennessee, 1991-1992
Other: JD, North Carolina Central University School of Law, 2002

Ramon M. Esclamado, MD
Chief, Otolaryngology–Head and Neck Surgery
Particular Clinical Interests and Skills: Care of patients with cancer of the head and neck, and benign tumor and other diseases involving the head and neck, salivary glands, thyroid, and parathyroid glands
Faculty Rank: Professor
Division: Otolaryngology—Head and Neck Surgery
MD Degree: University of California Davis School of Medicine, 1983
Residency: Otolaryngology, University of Washington, 1983-1989
Other: MS, Experimental Pathology, University of Washington, 1985

ON THE SPOT

Q: What's the best way to maintain healthy feet?

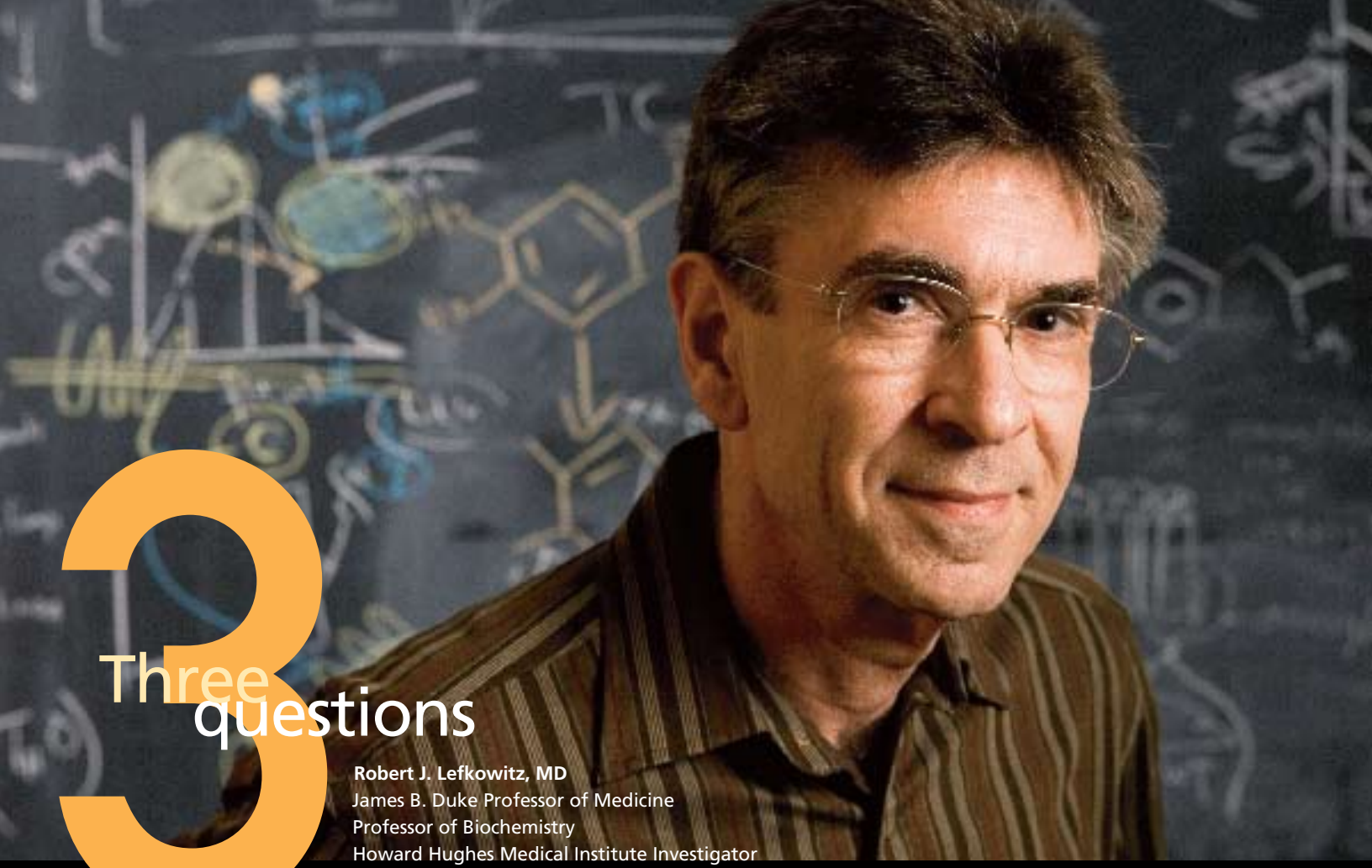
A: "Daily maintenance is key, with five active measures: wash your feet every day and keep them clean and dry—particularly between the toes; use a light moisturizer to help dry skin; keep toenails well groomed and smooth; wear clean, soft socks with supportive shoes that provide adequate room to prevent impingement on the toes; and inspect feet daily for signs of developing problems—around the nails, between the toes, and on the bottoms of the feet. This last step is particularly important for diabetic patients because of the tendency to develop nerve damage and decreased circulation.

"Of course, problems can occur in spite of preventative care. When problems such as ingrown toenails, corns, calluses, bunions, hammertoes, heel pain, and sports-related or general injuries develop, prompt treatment by a podiatrist or other foot specialist can help ensure a quick return to a more productive, healthy, and comfortable lifestyle."

—Douglas W. Schreyack, DPM

Editor's note: Schreyack is the first podiatrist in the Duke University Health System.

Search Duke's comprehensive Physician Referral Directory online at dukehealth.org/physician_search



Three questions

Robert J. Lefkowitz, MD
James B. Duke Professor of Medicine
Professor of Biochemistry
Howard Hughes Medical Institute Investigator

For unlocking secrets of cellular signaling, Robert J. Lefkowitz, MD, is one of Duke's most esteemed scientists—and practically a Duke institution in his own right. A member of the faculty since 1973, he's had a front-row seat to Duke's emergence as a medical, research, and academic giant. Lefkowitz recently took a moment to share his views with us.

What do you consider the major threads in Duke's evolution over the past three decades?

When I compare the campus to the way it was in 1973, it's unbelievable. There's been no time in 30 years when I couldn't look out the window and see construction. All these buildings have given us a place into which we could recruit bright faculty to do research—and today we have a number of real stars. We have the Institute for Genome Sciences & Policy, which has been driving the evolution of basic research in the past five years, and the Duke Clinical Research Institute, which has become the model everybody wants to imitate.

On the clinical side, again, it's a much bigger operation. I still remember when there was no Duke North.* Now we have the whole health system, and it's evolved into one of the top institutions in the country. Education has changed the least. Of course the material has evolved, and I always tell students I'm glad I went to medical school when I did because there was nothing to learn compared to today. But the approach has been constant—the unique curriculum that gives students the benefits of being involved in research for a year. And it still works.

During the next decade, what will be the major impact of today's research on clinical practice?

Genomics research will ultimately play out with the greatest importance. I think that within the foreseeable future, it will become practicable to sequence the entire genome of an individual in a relatively short period of time and at a reasonable expense. It sounds like *Brave New World*, but all that data, perhaps put on a card the size of a credit card and read by some sort of machine, will tell the physician all the different mutations, predict the susceptibility to all manner of things, and lead to proactive ways to prevent the development of diseases.

Do you see major threats facing biomedical research today, and if so, how should Duke deal with these?

The biggest threat is from either uninformed or misguided policymakers who decide federal funding for research and also have the audacity to determine what research is acceptable to them. It impacts young people who may be dissuaded from even going into research because they can't get money to support it. For issues such as stem cell research, we have a government holding back potentially lifesaving projects. Scientists are leaving this country in an exodus to places like Singapore, where they're willing to put billions of dollars into research without all kinds of restrictions.

Every time there's a budget crisis, we write our representatives. But that has only so much impact; to the extent that we can educate the public—that's obviously a much more powerful weapon.

*The current Duke Hospital facility, built in 1981.

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For more information on the courses listed below, please contact the Duke Office of Continuing Medical Education at 919-401-1200 or visit docme.mc.duke.edu.

DUKE CME CALENDAR

ON SITE

COURSE	DATE	LOCATION	CREDIT	REGISTRATION
ANESTHESIOLOGY Ultrasound for Every Anesthesiologist	October 20, 2006	Chicago, IL	7.25 credits	919-681-6437
PEDIATRICS 33rd Annual Postgraduate Course, the Alexander Spock Symposium: Common Management Problems in Outpatient Pediatrics	November 4-5, 2006	Durham, NC	9.5 credits	919-684-2289

ONLINE

COURSE	DATE	CREDIT	REGISTRATION
GASTROENTEROLOGY Integrated Approach to Irritable Bowel Syndrome	Available through January 31, 2007	1.25 credits	ja-online.com/dukeibs
RESEARCH ETHICS "Social Sciences Research in Medical Settings"	Available through December 31, 2006	1.5 credits	researchethicstraining.org
"Using Databases in Research"	Available through December 31, 2006	1.5 credits	researchethicstraining.org
"Prisoners Involved as Participants in Research"	Available through December 31, 2006	1.5 credits	researchethicstraining.org
"Protecting the Confidentiality and Privacy of Patients"	Available through December 31, 2006	1.5 credits	researchethicstraining.org
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"What Counts as Research with Human Subjects?"	Available through December 31, 2006	1.5 credits	researchethicstraining.org
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"Informed Consent for Research"	Available through December 31, 2006	1.5 credits	researchethicstraining.org
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Here's an idea! Get CME credit for reading DukeMed Magazine:

Physicians licensed by the North Carolina Medical Board (NCMB) must complete 150 hours of practice-relevant continuing medical education (CME) every three years in order to be relicensed. Up to 90 of the 150 required hours for NCMB relicensure can be "self-claim" credit for physician-initiated activities such as practice-based self study, consultations with colleagues, teaching, M&M conferences, journal clubs, and reading clinically relevant articles in *DukeMed Magazine*. The North Carolina Medical Board provides a form that can be downloaded from its Web site for your use in tracking physician-initiated activities: Visit www.ncmedboard.org/clients/NCBOM/Public/Physicians/cmerec.htm.

For additional information regarding CME credit for NCMB relicensure, please contact the NCMB at 919-326-1100, 919-326-1109, or 800-253-9653 (toll-free in-state long distance). Physicians licensed by other state boards may also be able to receive "self-claim" CME credit; for information please contact your state medical board.

These activities have been approved for AMA PRA credit.

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Leading ladies

Is business better when women help steer an organization's course? Research suggests so—and that's good news for medicine at Duke, which currently has more women in executive leadership roles than ever before. Together with fellow women and minorities in management roles at Duke, this team is redefining the look and feel of 21st-century leadership.

Read how diversity makes good business sense, why the entire community will reap the benefits, and what Duke is doing to attract the best candidates possible, page 4.

On the cover: Ira Cheifetz, MD, comforts a three-month-old heart and stomach surgery patient.

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