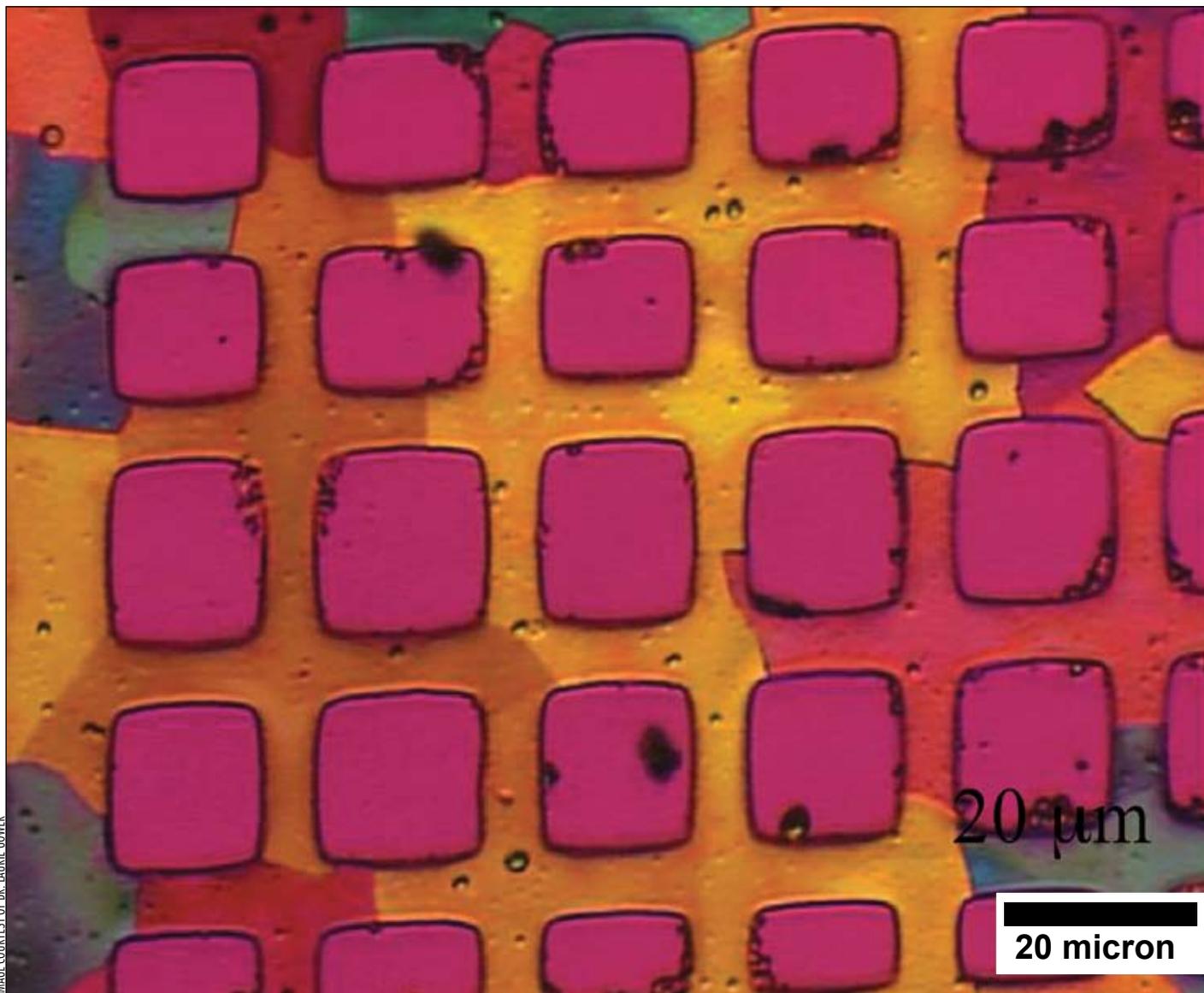


## NANOTECHNOLOGY



UF expects big things from the science of small

UF Health Science  
CENTER

Biology of Bullying  
6

Major Doctor  
16

Future Nurses  
18

## TABLE OF CONTENTS

- ② UP FRONT
- ③ ADMINISTRATION – Expert on Aging
- ④ EDUCATION – Future Tense
- ⑥ RESEARCH – Biology of Bullying
- ⑧ RESEARCH – Goodenow “Superchair”
- ⑩ COVER FEATURE – Nanotech Gets Bigger
- ⑫ PATIENT CARE – Dentistry Donation
- ⑭ DISTINCTIONS
- ⑮ (EXTRA)ORDINARY PEOPLE – Africa Calling
- ⑯ PROFILE – Major Doctor
- ⑰ GRANTS
- ⑱ COMMUNITY – FUTURE NURSES

**ON THE COVER:** In the biomimetics field, materials scientists are interested in mimicking biological processes, such as the patterning of mineral crystals to grow on selective regions of ultrathin self-assembled monolayers, which serve as an organic template.



PHOTO BY SARAH CAREY



PHOTO BY LISA BALTOZER

### Rescued Akita’s remaining front leg saved, straightened through bone lengthening procedure performed at UF

Life and limb go hand in hand for a 1-year-old Akita amputee whose remaining front leg was saved by UF veterinarians with a bone-lengthening procedure they’ve perfected over the years.

“The moment that I saw her, I thought she had great possibilities to be a therapy dog,” said Teri Harvey, who adopted the dog she named Cassidy — as in Hopalong — from the Akita Rescue Society of Florida, where she is a longtime volunteer.

“We want to teach her tricks and take her to the orthopedic hospitals, because we know the same device that helped her will be used to help many children, and just seeing Cassidy would be an inspiration to them,” Harvey said.

Harvey brought Cassidy for a final visit to UF on Nov. 24, where she said goodbye to the doctors and others who had administered the bone-lengthening treatments for a period of about four months.

When Cassidy was an 8-week-old puppy, another dog mauled and injured her. The Tri-County Humane Society performed emergency surgery to remove one of her legs. Cassidy was adopted out to a family and appeared to be doing well until it became clear her remaining front leg wasn’t growing properly, Harvey said.

“In fact, it was becoming distorted,” Harvey said. “The front leg was much shorter than the back leg and she had almost a kangaroo-like appearance.”

Small animal surgeons at UF have developed a reputation as experts in the use of a bone-lengthening device known as a circular external fixator. An orthopedic specialist in the Jacksonville area referred Harvey to UF’s Veterinary Medical Teaching Hospital in August, and the vets were able to use the fixator to help Cassidy. At UF, she received surgery and follow-up care until surgeons deemed her ready to go home. The therapy straightened, derotated and extended the dog’s forelimb by 30 percent.

Dr. Dan Lewis, a professor of small animal surgery, said he was very happy with how Cassidy looked during her last visit to Gainesville.

“She is very functional and doing fine on her forelimb,” Lewis said.

— Sarah Carey

Teri Harvey, above, with three-legged Cassidy. The 1-year-old Akita benefited from bone-lengthening treatment at UF.

# Expert on aging named director of UF institute

By John Pastor

**A**n international expert on aging has been named to lead UF efforts to improve the health of older Americans.

Marco Pahor, M.D., a professor of medicine and director of the Sticht Center on Aging at Wake Forest University, will be chairman of a new department at the College of Medicine and will serve as director of the UF Institute on Aging, beginning Feb. 1.



Dr. Marco Pahor

“We have to be leaders in understanding and solving the problems of an aging America,” said Douglas Barrett, M.D., senior vice president for health affairs. “We have considerable strength in gerontology, rehabilitation and working in social problems associated with the aged. The addition of Dr. Pahor builds the geriatric research component. He will bring new clinical trials and research programs to UF.”

Pahor’s arrival coincides with the creation of the department of aging and geriatric research in the College of Medicine and the rebirth of the Institute on Aging at the Health Science Center. The institute will pool the talents of diverse scientists to address the theme of disability in aging Americans, and the department — which will include faculty from a mix of disciplines — will serve as a foundation.

“The College of Medicine and the Health Science Center have made a real commitment to develop a world-class institute that will focus on aging and geriatrics,” said Craig Tisher, M.D., dean of the College of Medicine. “We believe we have a world-class leader of this institute in Dr. Pahor.”

The new department, the first in the country to focus primarily on aging-related research, will concentrate on finding ways to prevent disabilities in an aging population, Tisher said. In general, these disabilities prevent people from performing basic activities of daily living, such as walking, eating, dressing, bathing, toileting or getting out of bed.

“We are where cardiovascular disease was about 40 years ago, when we started to learn high blood pressure and high cholesterol were bad,” Pahor said. “Treating hypertension and cholesterol translated into prevention of major clinical events in cardiac patients. In aging, we are just beginning to learn potential areas to

intervene. Our approach uses the entire spectrum of investigation — from basic science to animal studies to clinical research — to understand what leads to disability and how to intervene.”

Pahor received his medical degree in 1980 from Catholic University in Rome, where he later received specialty thesis degrees in internal medicine and gerontology and geriatrics. He’s been section head of geriatric medicine and gerontology at Wake Forest and director of the Sticht Center on Aging since 1999. Pahor also served as principal investigator of a Claude D. Pepper Older Americans Independence Center, funded by the National Institute on Aging.

The collaborations Pahor and the aging institute engender at UF will help attract larger research support grants, officials said.

“Dr. Pahor is an international leader who will synergize the talent on this campus and move forward with an agenda to address issues of aging,” said Pamela Duncan, Ph.D., director of the Brooks Center for Rehabilitation Studies and a professor in the College of Public Health and Health Professions. “We can now integrate aging in terms of both preventive strategies and rehabilitation. Because of our population, there’s no greater need anywhere than in this state for these kinds of programs of excellence. UF is really poised to set the agenda for world-class research and clinical practice.”

Likewise, Pahor said UF’s research strength, bolstered by its brain and genetics institutes, Health Science Center colleges and collaborations with organizations such as Veterans Affairs, is well suited to serve Florida’s older population, which in turn provides a strong basis for research.

As for the new department, officials expect it to dovetail with the recently formed division of geriatric medicine within the department of medicine, which will emphasize clinical aspects of aging and maintaining a healthy elderly population.

The geriatrics division is headed by Thomas Mulligan, M.D., who until recently was chief of geriatrics at the McGuire Veterans Affairs Medical Center in Richmond, Va., and professor of internal medicine at Virginia Commonwealth University’s Medical College of Virginia.

Tisher said medical doctors who see patients in the new department of aging likely will have dual appointments in the department of medicine, which is chaired by Edward Block, M.D. **P**

## POST IT

### Series to explore role of volunteers in clinical research

People interested in understanding the vital role volunteers play in finding medical cures and treatments are invited to attend presentations in the series “Topics in Medical Research: Learn how research in human volunteers improves medical practice and health care” at UF’s McKnight Brain Institute.

Dr. Peter Stacpoole, program director of the General Clinical Research Center, will open the series at 7 p.m. on Feb. 1 by explaining how both healthy people and people with different diseases help test experimental medical treatments and procedures. Additional lectures by other experts will follow on Feb. 8, Feb. 15, Feb. 22, and March 1.

Each 30-minute lecture begins at 7 p.m. at the Deweese Auditorium inside the main entrance of the McKnight Brain Institute. Parking is free at the east parking garage of UF&Shands Medical Center.

For more information contact the  
General Clinical Research Center at 265-0032.

### Internationally renowned speakers at the Florida Bioinformatics Workshop 2005

All aspects of bioinformatics will be addressed, including functional genomics, proteomics, phylogenetics and systems biology at the Feb. 21–22 bioinformatics workshop at the Reitz Union. Students, faculty and staff are invited to the poster session and to hear 10 renowned speakers, including keynote speaker Eric Jakobsson, Ph.D., NIGMS Center for Bioinformatics and Computational Biology, and special guest speaker Nikos Tsinoremas, Ph.D., Scripps Florida.

The event is sponsored by the colleges of Engineering, Liberal Arts & Sciences and Medicine; IFAS - Florida Agricultural Experiment Station; the Office of Research and Graduate Programs; and the UF Genetics Institute.

More information at [www.cise.ufl.edu/~suchen/fbw2005](http://www.cise.ufl.edu/~suchen/fbw2005).

## Future Tense

Teledentistry grant expands dental education, service

By Lindy McCollum-Brounley

In “The Jetsons,” a wacky, futuristic cartoon that first hit television airwaves in 1962, George Jetson commutes to work in a space car that folds into a suitcase and the Jetsons’ teen daughter, Judy, talks with her girlfriends non-stop on the family’s “Visaphone,” a space-age cross between a telephone and a TV.

We don’t have cars that fold into suitcases for compact parking, but the Visaphone is a high-tech reality today that combines the Internet and videoconferencing technology.

Now this conferencing capability is at the heart of the college’s teledentistry project, which aims to equip every UF dental clinic with digital radiography and portable videoconferencing capability.

Bolstered by big ideas and a \$1.5 million grant from the U.S. Health Resources and Services Agency, the college is developing its teledentistry program with the ultimate goals of enhancing educational opportunities and improving patient care.

Internet Protocol allows videoconferencers to simply type in an IP address — a computer’s unique Internet identification number — and connect. Once the connection is established, live video, audio and other multimedia materials can be transmitted instantly to distant receivers anywhere else on the planet.

“It’s a matter of exchanging something similar to a phone number, but it’s a network number,” said Linda Kubitz, the College of Dentistry’s coordinator of distance learning. “So you just exchange numbers and literally dial each other up and there you are.”

Kubitz oversees the college’s IP videoconferencing meeting rooms, which have been used in a distance learning capacity for the past two years in its community-based clinics. The rooms are networked between the main campus and each of the clinics in Jacksonville, Tampa, St. Petersburg, Apopka and Hialeah. They are routinely used to deliver live lectures to clinic residents from main campus faculty and for interclinic grand rounds where residents share patient treatment planning and outcomes with each other. Staff in the community-based clinics, separated by hundreds of miles, also hold regular face-to-face meetings using the VC rooms.

“What we’re doing here is connecting people,” said Boyd Robinson, D.D.S., director of community-based programs. “An oral pathologist here in Gainesville, for instance, could utilize the mobile VC carts to assist a private practitioner in Miami in diagnosis and treatment planning of a patient’s oral lesion. That is an efficient use of college resources that provides a real service to the patient and the practitioner.”

Dentistry Dean Teresa A. Dolan, D.D.S., envisions the college’s teledentistry project opening doors to long-distance education, expert consultations and other patient care opportunities never before considered. Portable videoconferencing



PHOTO BY LINDY BROUNLEY

Dr. Timothy Wheeler, chairman of orthodontics at UF, conducts a sound and audio check in the college’s videoconferencing suite in preparation for his Sept. 24 presentation to the Polish Orthodontic Society’s annual conference held in Opole, Poland. The plasma displays behind him show the Gainesville view of the empty presentation hall in Opole. A short time later, Wheeler delivered his presentation to a full house of Polish orthodontists who enjoyed the speech in real time and participated in a live Q&A session after the last slide.

carts could be taken into nursing homes, public health centers or schools anywhere in the state to capture and share images of patient conditions with specialists back on the Gainesville campus. Web-based learning opportunities for continuing education, virtual study groups and patient record portability are all on the college’s horizon thanks to videoconferencing technology, she said.

“I think it’s important not to lose sight of why Congress supports teledentistry initiatives through these HRSA grants,” said Dolan. “It’s not so we can buy new toys. It’s so we can find more cost-effective ways of both educating practitioners and meeting access-to-care needs in the state.”

Dolan and her team have organized the project into three defined objectives. The first is to reinforce the college’s technology infrastructure, such as the server room capacity, and install mobile VC carts in the college’s community-based and partner clinics. The second is to develop the college’s capacity for live demonstrations, collecting clinical educational materials and then using the VC suites to share them with the college’s clinical sites. Development of Web-based educational materials is the third goal, the first example of which is the college’s oral pathology case-of-the-month Web site. Drawing on the college’s established oral pathology diagnostic services, it will feature real cases submitted by private practitioners and the college’s faculty, residents and students.

“I think the HRSA grant will help us increase our capacity to share information and develop and deliver educational products in a new way,” Dolan

teledentistry continued on 5

## Students honor anatomical donors in candlelit ceremony

By Tom Nordlie

First-year UF medical students honored a very special group of supporters in November, at an annual tribute to the deceased men and women whose bodies were used in gross anatomy laboratory.

Thanks to the generosity of donors and their families, students can begin their journey toward medical practice by studying the ultimate training ground for all physicians, said Nicole Paulson, co-director of the ceremony and academic chairwoman for the Class of 2008.

“You can’t replace the experience of working with a cadaver,” Paulson said. “You learn everything from these bodies.”

The ceremony, attended by the entire Class of 2008 and numerous College of Medicine faculty and administrators, began with music, poetry and readings at the Public Health and Health Professions/Nursing/Pharmacy Complex auditorium. The class presented a gift to the college, a framed collection of letters written by donors’ family members explaining why bodies were donated.

Afterward, the attendees made a candlelight procession to the gross anatomy laboratory. There, small groups of students gathered around carts holding the now-covered bodies they had studied twice a week for the past semester. Representatives of each group expressed their gratitude and related the few details they’d been given about who the donors were during life.

The ceremony helps underscore the reverence for human life the college instills in students, said Lynn Romrell, Ph.D., a professor of anatomy and cell biology and executive director of the Anatomical Board of the State of Florida. The board handles the donation of bodies used in medical education and research at the state’s institutions.

“At the end of the course,” Romrell said, “for the students to come back and reflect on the significance of that donation, to reflect on how much they’ve learned and to recognize in the end that none of this would have been possible without the real generous gift that comes through donation of the body, is a very important thing to do.” **P**

First-year medical students Mike Cammarata (left) and Pablo Medina light candles for a luminaria in the courtyard between the HPNP Complex and the Communicore, marking the path to the start of the ceremony.



PHOTO BY TOM NORDLIE

First-year medical students Pablo Medina, (left), Javier Gutierrez and Nicole Paulson from the College of Medicine’s Class of 2008 pause on their way to the gross anatomy laboratory during a ceremony honoring those who donated their bodies for anatomical studies.



PHOTO BY TOM NORDLIE

### teledentistry *continued from 4*

said. “It will cause us to have some conversations about the way we do our business today. Digital radiography alone is a huge transformation of the way we collect radiographic images, the way we store them and the way we access those images for clinical, teaching or research purposes.”

It is anticipated that digital radiography will facilitate the college’s goal of developing completely paperless patient records at some point in the not-too-distant future. Transportability and access to patient information is key to Dolan’s vision of teledentistry, where it possible for an expert in Gainesville to

view patient radiographs from a Web interface or conduct an oral exam of a patient at a remote location using the VC equipment.

Although it may seem “Jetson-like” and foreign to us now, teledentistry using videoconferencing technology will soon be as commonplace as other technonewcomers like cell phones, e-mail and the Internet itself.

“People don’t realize how easy it is,” Kubitz said. “It seems so futuristic that people just can’t understand the future is here and they need to take advantage of it.” **P**



PHOTO BY LISA BALTOZER

Psychiatry researchers Eric Storch (left) and Gary Geffken were part of a research team that found bullying affected a third of children with endocrine disorders such as type 1 diabetes, compared with an estimated 15 percent to 25 percent of all American youngsters. Endocrine disorders involve faulty production of hormones, which are chemicals that regulate growth, metabolism and other functions.

## The biology of bullying

By Tom Nordlie

Children with endocrine disorders that cause short stature, early or late puberty, or type 1 diabetes confront unique challenges in life, not the least of which is an increased risk of being teased, snubbed or even attacked by school classmates, UF researchers reported in an article published online in *The Journal of Pediatrics* in December.

Researchers surveyed 93 children ages 8 to 18 who were visiting UF endocrinologists for checkups and found a third reported being bullied in the previous month — more than the national average, said Eric Storch, Ph.D., an assistant professor of psychiatry and pediatrics in UF's College of Medicine.

Many suffered problems related to bullying, such as depression, anxiety and loneliness, which in some cases might hinder management of their endocrine disorders, Storch said. Researchers fear children might jeopardize their health to avoid being picked on.

It's possible youngsters who are bullied — particularly those with type 1 diabetes, which affects about one in every 400 to 500 U.S. children and adolescents — would skip their self-care practices to reduce the chances of appearing different from their peers, Storch said. In extreme cases, such neglect could lead to complications or even hospitalization, he said.

"If you know kids may tease you because you have to go to the bathroom to check your blood sugar or you can't eat some foods, you might begin avoiding those things," he said. "The idea behind it starts with social fears."

An estimated 15 percent to 25 percent of all U.S. children are bullied regularly, according to the U.S. Health Resources and Services Administration.

"One of the things I often hear is 'everyone goes through this, why make a big deal of it?' I don't argue that this happens," said Storch, a co-author of the study. "The point is if it's chronic bullying, it's often distressing."

Researchers were surprised to learn that children with disorders that affected their appearance, which included early or late puberty, short stature and male breast development, reported fewer adjustment problems related to bullying than those with type 1 diabetes or low thyroid function, which may not be noticeable, Storch said.

"It may be these kids get extra support from peers and teachers that help them cope with the negative peer experience," he said.

The study, funded by \$8,000 from the Human Growth Foundation and the UF Center for Pediatric and Family Psychology, asked children to complete four written surveys. Of the 93 children participating, 33 had type 1 diabetes, 26 had low thyroid function, 25 had short stature, three had male breast development, three had early puberty and three had late puberty, Storch said.

The endocrine system includes the pituitary gland, thyroid gland, the testicles or ovaries and other structures that release hormones to regulate growth, metabolism, sexual maturation and other functions, said study co-author Gary Geffken, Ph.D., a UF associate professor of psychiatry, pediatrics and clinical and health psychology. Many common endocrine disorders occur when too much or too little of a specific hormone is produced.

The UF findings should be a wake-up call for primary-care providers, who often see children with endocrine disorders before they are referred to specialists, Geffken said.

"Pediatricians and their nurses or nurse practitioners should be looking for that (evidence of bullying) in these kids with chronic illnesses, because they're more at risk with chronic conditions — I don't think it's just endocrine conditions," he said. "They need to treat the whole person, which is what we all want when we go to the doctor." **P**

## A prescription for drug safety in rural hospitals

By Linda Homewood

Improving medication safety in small rural hospitals has been a work-in-progress for researchers at the College of Pharmacy. The project's principal investigator, Abraham Hartzema, Pharm.D., a College of Pharmacy professor and eminent scholar, said improving patient safety and preventing medication errors were the research team's primary goals.

UF has collaborated with the Department of Health's Office of Rural Health and Florida Medical Quality Assurance Inc. to increase the safety of medication management in 12 rural Florida hospitals. Designated as critical access hospitals, these facilities have 25 or fewer beds and provide emergency medical treatment to small communities.

"These hospitals have very limited resources and staffing. They often do not have a pharmacist physically on staff and must contract with pharmacists at other sites for medication review," Hartzema said.

The researchers presented their work on drug safety in rural hospitals in December at the American Society of Health-System Pharmacists' mid-year clinical meeting in Orlando.

The *Journal of the American Medical Association* in 1995 published a study that found medication errors resulted from 16 types of failures in the hospital management system. Aspects of the management system related to drug knowledge, dosing, allergies,

transcription, tracking and interservice communication accounted for 78 percent of the errors. In 2000, the Institute for Safe Medication Practices studied adverse events nationally that led to serious injury or death. The study found pharmacy management systems can prevent errors at every stage of the medication process.

To work toward creating a management system, the Department of Health's Office of Rural Health awarded nearly \$95,000 each year for three years to establish internal quality control for each of the 12 critical access hospitals. The hospitals enlisted UF as a research and education provider. In the first year, UF faculty made site visits and organized summit conferences and hospital staff completed a needs assessment and started two medication safety initiatives. Each hospital appointed medication safety officers and established medication safety committees. In the second year, UF faculty continued to make site visits and observed operational procedures established by the newly formed committees.

Hartzema's project team includes Almut Winterstein, Ph.D., a clinical assistant professor, and Jessica De Leon, Ph.D., coordinator of research programs at UF; Tom Johns, Pharm.D., associate director for pharmacy services at Shands Healthcare, Alyson Widmer from Shands/UF Information Technology; and Robert Winkler,



PHOTO COURTESY OF DR. HARTZEMA

Dr. Abraham Hartzema meets with hospital staff at George E. Weems Memorial Hospital in Apalachicola.

hospital administrator, and Warren Bailey, Pharm.D., from Doctor's Memorial Hospital in Bonifay.

The Agency for Healthcare Research and Quality awarded an additional \$150,000 six-month grant last fall to fund health information technology planning, which includes computer systems that allow for timely review of new prescription orders by pharmacists in other locations. This planning grant will lead to larger funding for implementation — a goal the UF team is working toward, Hartzema said. **P**



PHOTO BY LISA BALTOZER

Oragenics' Chief Scientific Officer Jeffrey Hillman (left) and CEO Chuck Soponis stand in the company's new research laboratory, housed in the recently completed 5,300 square-foot Oragenics headquarters at the university's Sid Martin Biotechnology Transfer Center. Lab Manager Jixiang Mo, background right, oversees the day-to-day operations of the lab's work.

## Oragenics' cavity-preventing mouth rinse gets FDA go-ahead for human testing

Human testing of a mouth rinse that has the potential to provide a lifetime of cavity protection received the green light Nov. 30 from the Food and Drug Administration to proceed to clinical trials. This came after months of negotiations between the agency and the applying company, Oragenics Inc., which holds a license from UF for the technology.

Oragenics, located on the campus of the university's Sid Martin Biotechnology Development Incubator in Alachua, is one of UF's technology transfer success stories. Its founder, Jeffrey Hillman, D.M.D., Ph.D., is a professor of oral biology at the College of Dentistry, and replacement therapy is his life's work.

"It's never been a product for me," Hillman said. "The possibility that I could help people always interested me."

Hillman's replacement therapy could prevent most dental caries — tooth decay. Caries is caused by a bacterium called *Streptococcus mutans* that colonizes the tooth surface. For millions of years, these bacteria have lived on our teeth without causing harm. But our modern, sugar-laden diets have upset the equilibrium and *S. mutans* is a bug gone bad — it gorges on the sugar in our food, dissolves tooth enamel with its lactic acid waste and leaves black pits of decay in its wake.

*S. mutans* has become one of the leading infectious agents on the planet, causing a worldwide epidemic of dental caries that the World Health Organization estimates affects 60 percent to 90 percent of all school-aged children and the vast majority of adults.

— Lindy Brounley



PHOTO BY LISA BALTOZER

## HIV/AIDS expert Goodenow appointed to research "superchair" position

By Tom Nordlie

**P**ediatric HIV/AIDS expert Maureen Goodenow, Ph.D., a UF professor of pathology, immunology and laboratory medicine and pediatrics, has been appointed to a \$4 million endowed AIDS research "superchair" position named the Stephany W. Holloway University Chair in AIDS Research.

Orlando native John W. Holloway honored his sister Stephany, who died from complications of AIDS in 1990, with a \$1 million gift to UF's pathology department to establish the superchair position. Also known as a university chair, a superchair is the most highly funded endowed research position at UF.

Holloway's gift was supplemented with \$750,000 in state matching funds and \$250,000 in matching funds provided by the President's Challenge, a special UF discretionary fund established with private donations. The College of Medicine's pathology department assigned the final \$2 million from an endowment fund.

Goodenow, a geneticist who co-founded UF's first ongoing AIDS research program, said the

funding will be used to support personnel and projects to grow the existing research program with the goal of developing a vaccine against the HIV virus.

Bioinformatics technology will be key to the effort, she said, because it enables researchers to sort, separate and correlate information quickly.

"There's a lot of genetic information on HIV available, but it needs to be mined," she said.

HIV, or human immunodeficiency virus, weakens the body's immune system and can lead to the development of AIDS in infected individuals.

Florida ranks third in the nation in the number of AIDS cases, Goodenow said. Approximately 100,000 HIV-infected persons live in Florida, roughly 11 percent of the national total. HIV/AIDS is the fourth most common cause of death among Floridians ages 25 to 44.

The Holloway gift brings to fruition an effort initiated in 2002 to endow a major pediatric AIDS program, said UF pathology

department Chairman James M. Crawford, M.D., Ph.D.

"This is truly a dream come true for our department, particularly because Dr. Goodenow is such a deserving recipient of this chair," Crawford said.

A UF faculty member since 1988, Goodenow has investigated numerous aspects of HIV, including its genetic structure and biochemistry, influence of AIDS disease progression and role in the development of various cancers.

She is perhaps best known for discovering genetic variations that regulate transmission of HIV from mothers to their unborn children, determining why the antiviral drug zidovudine reduces the level of HIV in the bloodstream in pediatric patients and discovering that genetic variations in HIV explain why some strains of the virus are inherently more resistant to certain drugs. Recent studies looking at gene expression have identified interactions between the virus and the cells it infects that could be used to develop new drug targets. **P**



PHOTO BY TOM NORDLIE

Anesthesiologist Dr. Tammy Euliano (left) checks the heart rate of Christina Brill's unborn baby in Shands at UF medical center. The computer screen displays fetal heart rate data obtained by ultrasound and by fetal electrocardiogram, or EKG.

## New fetal heart monitor could give better health picture during labor

By Tom Nordlie

Anyone who's tried to tune in a distant radio station knows how multiple signals can muddle each other.

Obstetricians face a similar problem with ultrasound devices, which are used during labor to track fetal heart rate and considered to be the best available indicator of an unborn baby's well-being. The sonar-like system must find the baby's heartbeat in a jumble of sounds from the mother's body, and the results can be inadequate or even misleading.

In hopes of giving doctors a better assessment of fetal well-being, UF physicians and a private engineering firm are developing what could be the first commercial monitoring system to noninvasively detect electrical activity in the baby's heart and produce an electrocardiogram, or EKG, said Tammy Euliano, M.D., a UF associate professor of anesthesiology and obstetrics and gynecology.

When perfected, the system might help reduce the number of unnecessary Caesarean deliveries, detect abnormal fetal heart rhythms, distinguish false labor from early labor and track the mother's heart rate and uterine contractions.

"There have been some preliminary studies by other groups that say fetal EKG is a more accurate predictor (than ultrasound) of how the baby's doing during labor," Euliano said.

The main component of the system is a complex

mathematical program developed at UF called MERMAID, which separates data from multiple sources faster and more efficiently than its competition, said Neil Euliano, Ph.D., president of Convergent Engineering, a Gainesville-based biomedical engineering company involved in the project. He is Tammy Euliano's husband.

The system includes an amplifier that magnifies fetal EKG signals and computer programs used to calculate and label the fetal and maternal heartbeats and assign a "trust factor" to indicate the information's reliability, he said.

Ultimately, fetal heart rate may not be the most important data the system delivers, said Rodney Edwards, M.D., a UF assistant professor of obstetrics and gynecology who is part of the research team. Although continuous fetal heart rate monitoring is a standard practice for birth care, it's used primarily because it's the only data doctors can obtain, Edwards said.

The researchers hope to find features in the EKG that correlate strongly to fetal well-being, giving doctors better information than ultrasound provides. Study findings from the past four decades indicate ultrasound has not improved outcomes and may have contributed to a five-fold rise in Caesarean deliveries since the 1960s, he said. **P**

## A twist on understanding genes

A gene commonly thought to help suppress tumors may actually block cells' ability to repair damaged DNA, causing mutations that may fuel the spread of colorectal cancer, UF researchers report in the *Journal of Biological Chemistry*.

The gene is known as adenomatous polyposis coli, or APC. Mutations in APC have been linked with a hereditary form of colorectal cancer known as familial adenomatous polyposis and with most spontaneous forms of the disease, the second-leading cause of cancer-related deaths in the United States.

"Our findings indicate that this gene plays a dual role: Under certain conditions it can be a tumor suppressor, and under another condition it can be very harmful and actually create new mutations," said Satya Narayan, Ph.D., an associate professor of anatomy and cell biology at the UF Shands Cancer Center. "This is a very new twist in our understanding of this gene."

Narayan's research was funded by a four-year \$1 million grant from the National Cancer Institute. In additional studies, he will evaluate whether enhancing concentrations of the protein the gene produces could be used in combination with anticancer drugs to more effectively kill tumor cells by inducing DNA damage.

"The long-term goal is to find out how specifically to target APC within cancer cells while avoiding normal cells," Narayan said.

—Melanie Fridl Ross



PHOTO BY TOM NORDLIE

## Orthopaedics institute wins award

UF received a Project Leadership Award from the Construction Owners Association of America for leadership and project-management excellence demonstrated in the construction of its new \$25 million Orthopaedics and Sports Medicine Institute. The institute was designed and built in two years, and the completion and move-in were successful despite interference by three hurricanes.

In the photo above, Miles Albertson (right), a UF associate director of facilities planning and construction and the institute's project manager, presents a commemorative plaque to Dr. Peter Gearen, a UF associate professor and chairman of orthopaedics and rehabilitation.

The institute will be formally dedicated in a public ceremony at 10 a.m. Saturday, Feb. 19, at the south entrance. A reception will follow at 11 a.m.

# ThinkSMALL

## UF expects big things from nanotechnology

By Rocco Castoro

Scientific devices that are dwarfed by dust mites may one day be capable of grand biomedical miracles. Nanotechnology, science on a small scale, is causing UF researchers to dream big, from treating cancerous cells with the accuracy of a heat-seeking missile to the construction of artificial bone grafts that mimic real tissue to untold possible applications.

Indeed, molecules loom large at this scale of manipulation — where one nanometer equals one millionth of a millimeter, which is about 300,000 times smaller than the average dust mite.

The unique quantum phenomena that happen at the nanoscale draw researchers from many different disciplines to the field, including medicine, chemistry, physics, engineering and others. At UF, the Nanoscience Institute for Medical and Engineering Technology has fostered the necessary collaboration between the multiple colleges that study, develop and engineer nanotechnology. UF is peering into the future with an initiative that has been years in the making — the construction of a recently approved, state-funded \$35 million Nanoscale Research Facility, now nearing the final planning stages.

Vice President for Research Winfred Phillips, D.Sc., is helping coordinate the initiative and is one of its most vocal supporters. He says NIMET is a key element in uniting the numerous experts in nanoscience who already call UF home.



PHOTO BY ERIC ZAMORA

Dr. Donn Dennis investigates the effectiveness of a particular type of nanoparticle to reverse the toxic effects of amitriptyline on electric function in a heart isolated from a guinea pig.

“We’re trying to bring together all those people from particle science to microelectronics to bioengineering to genetics and use the nanoscience initiative as a glue for dealing with things in the nanoscale,” Phillips says. “You have to be able to fabricate things, you have to be able to analyze things, you have to be able to handle things smaller than ever imagined, in ways not done before.

“I think we will be a leader in the field,” Phillips says. “That’s why we’re investing in this building and why we moved it up on the priority list.”

The new Nanotech Research Facility will expand on UF’s ability to provide a place for big thoughts about tiny particles. The complex will not only house the advanced equipment necessary for the fabrication and development of nanotechnologies, it will also provide an independent meeting center for the teamwork that currently takes place distantly across campus.

### THINKING BIG

Phillips says that UF is one of the few places in the country that seeks to

implement so many different aspects of nanotechnology on such a broad scale. Encouraging research among faculty who might not otherwise have collaborated is one of the main reasons campus officials are building the center. The anticipated groundbreaking date is April 24, 2006.

Donn Dennis, M.D., who has conducted breakthrough research that includes using nanotechnology to combat the effects of drug toxicity and detect the presence of cellular irregularities at the nanoscale, is coordinating the medical component of the new research center. He says this combination of specialized and diverse areas of expertise is required to make such theoretical technologies a reality.

The potential of nanomedical technologies to provide alternatives to seemingly untreatable conditions is monumental, he says. Nanotherapeutics and nanodiagnostics, along with a thorough understanding of nanotoxicity (how humans react to nanoparticles once they are inside the body) will provide a foundation to revolutionize patient care.

“In medical diagnostics you use nanotechnology to detect diseases or detect drugs. In this application, the nanostructures will generally function outside the body and nanotoxicity isn’t a concern because the nanostructures aren’t being administered directly to the patient,” says Dennis, the Joachim S. Gravenstein professor of anesthesiology, of the nanoscopic instruments and sensors that make nanodiagnostics possible. “So, compared to nanotherapeutics where nanotoxicity will likely provide some barriers to development and a greater number of federal regulatory issues, the development time for nanodiagnostics will be much shorter. Here you can exploit the power of nanotechnology in the near term for the benefit of patients. I suspect the earliest medical advances with nanotechnology will be in the area of nanosensor technologies, probably within the next one to five years.”

### MICRO DETECTIVES

Richard Melker, M.D., Ph.D., a professor of anesthesiology, pediatrics and biomedical engineering, says nanotechnology will allow doctors to assess patients less invasively.

Melker and his colleagues have spearheaded research that uses nanosensors developed for military use in recognizing airborne rogue agents and chemical weapons to detect drugs and other substances in exhaled breath. Aside from being one of the few applications of nanotechnology Melker says will likely be available on the market in the next five years, it may also prove to be one of the most commercially viable. Melker’s research has primarily focused on implementing sensors capable of detecting licit and

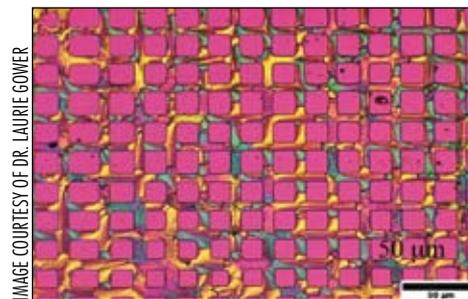
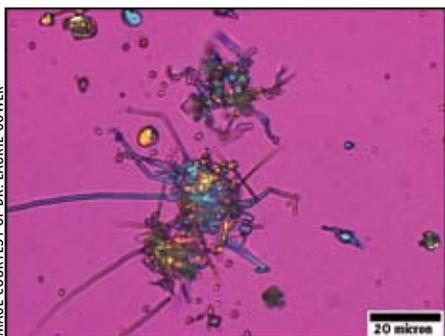


IMAGE COURTESY OF DR. LAURIE GOWER

In the biomimetics field, materials scientists are interested in mimicking biological processes, such as the patterning of mineral crystals to grow on selective regions of ultrathin self-assembled monolayers, which serve as an organic template.



Through biomimetic processing, mineral nanofibers can be formed at room temperature in a water-based reaction. The fibers are extruded from an amorphous globule to produce single-crystalline mineral nanofibers.

example of the kinds of ingenious surprises nanoscience has to offer. Testing of athletes for banned substances and individuals in drug treatment programs are two areas Melker says are long overdue for breath detection technologies.

“We see this totally replacing urine testing,” Melker says.

## ◦ TREATMENT ON THE NANOSCALE

Nanotherapeutics also has the potential to offer invaluable advances in the way drug treatments are administered.

Guenther Hochhaus, Ph.D., and Rajiv Singh, Ph.D., from the colleges of pharmacy and materials sciences and engineering, are researching the use of nanocoatings to slow the release of asthma medication in the lungs, allowing people with asthma to experience longer periods of relief from symptoms after using inhalants.

“What we try to do is essentially to make the drug particles in such a way that they don’t dissolve that fast,” Hochhaus says. “We have done this with nano-thin coatings.”

Most legal and illegal drug overdoses currently have no specific way to be effectively neutralized, says Dennis. Using nanoparticles as absorbents of toxic drugs is another area of medical nanoscience that is rapidly gaining momentum.

“Generally, our goal in this program is to design nanostructures that effectively bind molecular entities, which currently don’t have effective treatments,” he adds. “This list would include tricyclic antidepressants or cocaine.”

“We’re putting these nano-sponges into the bloodstream and they’re soaking up toxic drug molecules to reduce the free amount in the blood,” Dennis says. “That, in turn, causes a resolution of the toxicity that was there before you put the nano-sponges into the blood. We have used a variety of different types of nanostructures in this program. Some of the most effective and safe nano-sponges are constructed by materials that have been around a long time and are deemed to be safe.”

Although neutralizing drug overdoses through nanoscience is a bit further off than its diagnostic counterpart, lab tests on animals have shown very promising results, Dennis says.

Nanomotors and nanotubes, technologies pioneered by UF’s Charles Martin, Ph.D., a professor of chemistry, could be used to administer drugs more precisely. Martin says the technology should be able to target specific cells in a patient suffering from cancer or other life-threatening conditions. Toxic drugs used to fight these illnesses would become much more direct and, consequently, less harmful to the body.

Dennis says the construction of a comprehensive research facility is crucial to meet the rigorous requirements for the development of nanotechnologies such as these.

## ◦ MIMICKING NATURE

Bill Appleton, Ph.D., is the laboratory director of UF’s NIMET project and he was previously involved with Harvard’s Center for Imaging and Mesoscale Structures. He

illicit drug usage with a device similar to that used by law enforcement to determine blood alcohol levels. The researchers plan to create a company that will market products developed from this technology.

“What we’ve basically determined is that you can detect many drugs in breath, but the amount you detect in breath is going to be related to the amount that you take and also to whether it partitions well between the blood and the breath,” he says. “So, for some drugs that we would be interested in detecting — substances of abuse like marijuana and things like that — the concentration in breath is going to be much lower than the concentration of alcohol.”

The novel but widely applicable uses for such technology are a good

has been named as the laboratory director, NRF, Nanoscience Institute for Medical and Engineering Technologies. His primary responsibility is to see that the new facility is constructed in a way that offers the best accommodations for the study of nanoscience.

“It’s always difficult with things like this,” Appleton says of the facility, “but the main thing these kinds of centers bring is a set of tools that you must have if you’re going to be competitive in nanotechnology research. The main thing that this building is supposed to deliver is the right set of research tools.”

The new institute should provide researchers with their own Oz to explore the future of medicine. Although some applications of nanotechnology may be ready for mass production within the next few years, other researchers at UF are looking farther down the nano-brick road.

Laurie B. Gower, Ph.D., an associate professor of materials science and engineering, has been researching bone formation and structure at the nanoscopic level. She is examining biomimetic methods of constructing a synthetic bone-graft substitute with a nanostructured architecture that matches natural bone, so that it would be accepted by the body and guide the cells toward the mending of damaged bones.

“Biomimetalization” refers to minerals that are formed biologically, which have very different properties than geological minerals or lab-formed crystals. The crystal properties found in bone are manipulated at the nano-scale and are imbedded within collagen fibers to create an interpenetrating organic-inorganic composite with unique mechanical properties. Gower says mimicking the “nano-structured architecture” found in bones is a main goal of her research because it is this level of structure that provides the strength and toughness of bone.

While Gower says her ultimate goal of a bioresorbable and load-bearing bone graft substitute is a long way off, she foresees numerous implications of the material in the future of osteology.

“Ideally, since bone is a living tissue, you’d like to put in a biomaterial that can be reabsorbed and remodeled by the cells that are there in the body to be replaced with the natural bone component.”

She says the current “gold standard” for bone grafts is to use donor tissues (either from the patient or from cadavers), but this has many drawbacks, so if a nano-engineered alternative can be offered in the near future, this would provide the patient with many benefits. She also sees the nanotechnology initiative and research center as steps toward pushing her research into reality.

“You basically can’t learn it all these days,” Gower says. “There’s so much science out there that you need to have collaboration among people in the different fields, but you have to get them speaking together first.” **P**

*Rocco Castoro is a freelance writer based in Gainesville.*

From sea shells to bone, biological systems have complex nanostructures, and materials scientists such as Dr. Laurie Gower are trying to learn how these materials are made.



PHOTO BY DAVID BLANKENSHIP

## In the spirit of giving...

Dentistry and Office of Global Health work together to send dental equipment to the Dominican Republic

By Lindy McCollum-Brounley

The container truck was a day late and 20 feet shorter than promised, but Michael Parsons, Ph.D., director of the Health Science Center's Office of Global Health, was nonetheless thrilled to see it backing up to the HSC loading dock Dec. 7. The container was slated to move donated equipment to Catholic Northeastern University in the Dominican Republic and Parsons' office had worked hard to facilitate the transaction.

"The donation of such equipment is in keeping with a key philosophy of the UF Office of Global Health to ensure equity in the relationship between UF and its health-care partner universities for their invaluable assistance to our teams in the field," Parsons said. "In addition, such donations serve as a more long-term, and therefore more sustained, aspect of the overall international health outreach provided by UF."

As soon as the truck was docked and chocked, Parsons, joined by Timothy Garvey, D.M.D., a UF professor of pediatric dentistry, second-year dental student Miguel Martinez, and Butch Dees and Charles Lesch of dental maintenance, began loading the container. They squeezed in 16 dental chairs and assorted operator's and assistant's chairs donated by the College of Dentistry, as well as an autoclave sterilizer and two dental radiograph cameras.

Because the container that arrived Dec. 7 was smaller than expected, a second container was sent from Jacksonville to "pick up the slack" of the first shipment. The second container was loaded Dec. 8 with nearly 100 walkers donated by Gainesville Medishare, another two dental chairs and a large radiograph machine.

Garvey, who has led dental humanitarian mission trips to the Dominican Republic since 1987, wanted the radiograph and autoclave equipment as well as two of the dental chairs to go to the "Instruments of Peace" dental charity established in the Dominican Republic by UF dental alumna Ivis Corbo-Alvarez.

The remaining 16 chairs were installed in Catholic Northeastern University dental clinic during Garvey's humanitarian mission to the D.R. in the second week of December.



PHOTO BY LINDY BROUNLEY

Charles Lesch (from left), Miguel Martinez and Dental Maintenance Supervisor Butch Dees muscle the last dental chair into the container. In all, 16 dental chairs, assorted operators' and assistants' chairs, two radiographic cameras and an autoclave were loaded for transport to Catholic Northeastern University in the Dominican Republic.

The equipment is not new — many of the dental chairs date to the college's 1976 opening — but it has been well maintained and will be greatly appreciated in the Dominican Republic.

"It's going to be like Christmas morning when they open the doors of this container over there," laughed Martinez. Born and raised in Miami, Martinez is of Dominican descent and still has family living there. He joined Garvey on the college's December trip.

Garvey's dental humanitarian team this year included 21 UF dental students, three private practice dentists and one dental assistant. In 2004, the dental team provided free dental care under very primitive conditions to more than 400 Dominicans in remote mountain villages. **P**



PHOTO BY LINDY BROUNLEY

◀◀ Truck driver Timothy Wescott (from left), Dr. Michael Parsons, Charles Lesch, Miguel Martinez and Butch Dees stand in front of the fully loaded container.

▶▶ Charles Lesch and Timothy Wescott close the doors and seal the loaded container. From Gainesville, the container was trucked to the Port of Jacksonville, where it was loaded onto a ship and transported to the Dominican Republic.



PHOTO BY LINDY BROUNLEY

# New centers of excellence to benefit lung research, patient care

By Tom Nordlie

UF's lung disease research and patient care efforts received a huge boost this fall from the creation of two centers of excellence, one dedicated to combating chronic obstructive pulmonary disease and the other to fighting mycobacterial diseases.

Funding for the two centers is expected to reach more than \$11 million.

The UF Center of Excellence in Chronic Obstructive Pulmonary Diseases will investigate illnesses that permanently impair lung function, such as asthma, emphysema, cystic fibrosis and alpha 1 antitrypsin deficiency, said principal investigator Veena Antony, M.D., a professor and division chief of pulmonary and critical care medicine in the department of medicine.

"At least 14 percent of the population of Florida is affected by some form of chronic obstructive pulmonary disease," Antony said. "Much of it is secondary to smoking."

One of the center's initial research projects will focus on the effects of nitric oxide in cigarette smoke on lung components, she said. The study is funded by a two-year grant totaling almost \$1 million from the state Department of Health through the James and Esther King Biomedical Research Program. That grant convinced College of Medicine Dean C.

Craig Tisher, M.D., to dedicate \$80,000 in matching funds to the effort, along with lab space and personnel to make the center possible, Antony said.

Establishment of the center also paved the way to consolidate existing clinical programs for genetic lung diseases in one location, on the 11th floor of Shands at UF. The clinic opened in November.

The UF Center of Excellence in Mycobacterial Diseases focuses on the investigation and treatment of tuberculosis, nontubercular mycobacterial disease and other maladies caused by bacteria from the genus *Mycobacterium*, she said. The tuberculosis research efforts are funded by a National Institutes of Health grant totaling \$2.7 million over the next three years.

The center also is funded with a five-year grant totaling \$7.5 million from the Centers for Disease Control and Prevention through the state Department of Health to establish a Regional Training and Medical Consultation Center, said principal investigator Michael Lauzardo, M.D., the state's deputy tuberculosis controller and an adjunct assistant professor of medicine.

UF will be one of four centers nationwide, and will handle research, education, medical training and consultation services to physicians in a 10-state area,



PHOTO BY LISA BALDZER

Dr. Michael Lauzardo (left) and Dr. Veena Antony are key personnel in the two new centers dedicated to fighting lung diseases.

Lauzardo said. Other partners in the effort include the University of South Florida and A.G. Holley Hospital, the state's tuberculosis hospital.

Florida continues to maintain a comprehensive tuberculosis treatment program as well as an extensive training and education program, so creation of the center will enable UF researchers to access a goldmine of data on state TB cases, he said. Florida has the highest incidence of tuberculosis infections in the Southeast.

"This is an incredible opportunity for the division, the department and the College of Medicine," Lauzardo said. "We are equipped here to create a smooth interface between the worlds of academia and public health, which doesn't happen often enough." **P**



PHOTOS BY TOM NORDLIE

Pediatric surgeon Dr. David Kays (left) visits recently with Jason and Janice Kennedy and their 2-week-old son Matthew in the temporary Level 3 neonatal intensive care unit at UF&Shands. Dr. Mat Langham, Jr. Dr. David Burchfield and Dr. Michael Weiss see patients in the renovated NICU.

## Shands Children's Hospital debuts expanded neonatal intensive care unit

By Tom Nordlie

Shands Children's Hospital has made more room for its smallest patients.

The newly expanded Donald V. Eitzman, M.D., Regional Neonatal Intensive Care Unit – Level 3 opened for business in January, boasting \$4.2 million in upgrades and 4,000 square feet of patient care space, double the original amount.

The unit, built in 1984, now comprises 10,000 square feet of total space, including new rooms for surgery, and high-tech equipment and new space where families can visit and relax. The improvements are sure to boost the UF neonatology program's already stellar reputation, said David Burchfield, M.D., a professor of pediatrics and chief of neonatology at the College of Medicine.

"We have a special mission here in our neonatal intensive care unit, and that is when kids come here they stay here. They get everything they need and they

don't have to leave for other things," Burchfield said. "I'm very happy that throughout this expansion, which took about a year, Shands at UF did not have to turn down one patient because of our expansion."

The renovation was funded with a \$4.2 million dollar gift from the Children's Miracle Network, an organization that raises funds and builds awareness for nonprofit children's hospitals throughout the United States and Canada.

The unit was renamed in 1994 to honor UF neonatology pioneer Donald V. Eitzman, currently a distinguished service professor emeritus of pediatrics. Serving in UF's department of pediatrics since 1959, Eitzman was the department's first neonatology division chief and he established the first neonatal intensive care unit at Shands in 1974. **P**

## DENTISTRY

### ALBERT OLUWAYANMIFE

**ADEGBEMBO**, B.D.S., has joined the department of operative dentistry's division of public health research and services with teaching and research responsibilities as assistant scientist. He comes to the college from the Faculty of Dentistry, University of Toronto. Adegbebo earned his dental degree from the College of Medicine of the University of Lagos, Nigeria, and his Diploma in Dental Public Health and Master of Science in Dental Public Health from the University of Toronto. He is a fellow of the Royal College of Dentists of Canada.



### D. LAWRENCE BROCK

D.M.D., has been appointed clinical assistant professor in the department of periodontology. Previously, Brock served as chief of periodontics at Bergen Pines County Hospital in Paramus, N.J., was a part-time instructor at the UF College of Dentistry and served as acting director of general dentistry at Sunland Center in Gainesville. Brock earned his Doctor of Dental Medicine and certificate in periodontics from UF and his area of research interest is bone regeneration after root planing.



### DANIELA RODRIQUES P.

**SILVA**, D.D.S., has been appointed assistant professor in the department of pediatric dentistry. Previously, Silva served as a faculty member at the University of Detroit Mercy School of Dentistry and João Prudente School of Dentistry, Brazil. Silva earned her Doctorate of Dental Science from Goiás Federal University, Brazil, a certificate in pediatric dentistry from Camilo Castelo Branco University and a Master of Science in pediatric dentistry from the University of Michigan.



### K. DAVID STILLWELL

D.D.S., has joined the college as an assistant clinical professor in the department of operative dentistry's Foreign Trained Dentist Program. Prior to coming to UF, Stillwell maintained a practice for 19 years in Columbia, Mo., and Mountain Home, Ark., and has held academic appointments at the University of Colorado School of Dentistry, the University of Missouri School of Medicine and the University of Missouri, Kansas City. Stillwell earned his Doctorate in Dental Surgery from Louisiana State University and a certificate in General Practice Dental Residency from the University of Colorado.



## MEDICINE

### ALBERT L. RHOTON JR.,

M.D., a professor and chairman emeritus of neurosurgery who is known as the father of microneurosurgery, continues to receive worldwide honors. This fall, Rhoton received the Distinguished Service Award from the Congress of Neurological Surgeons at its annual meeting in San Francisco. He was one of five physicians, and the only neurosurgeon from outside Brazil, honored by the Society of Brazilian Neurosurgeons as "homenageados," or "homaged" at the 25th Congresso Brasileiro de Neurocirurgia in Goiana. And Rhoton served as co-president of the 2nd International Symposium on Microsurgical Anatomy in Antalya, Turkey, where he gave nine lectures in four days.



## PHHP



**SHANKAR MANAMALKAV**, (from left) coordinator of computer applications in the department of clinical and health psychology, **JANET HAIRE**, office manager in the department of rehabilitation and **ANDREA BURNE**, assistant director for health administration in the department of clinical and health psychology, were honored as 2004 Employees of the Year at the annual staff and faculty appreciation dinner.

### JOHN ROSENBEEK

Ph.D., an internationally known speech-language pathologist, has been named chairman of the department of communicative disorders. Rosenbek succeeds James Hall III, Ph.D., who will continue as a professor and researcher in the department.



Rosenbek joined the UF faculty as a professor in September 2000, previously serving 25 years at the Veterans Administration Medical Center in Madison, Wis. He is a fellow of the American Speech-Language Hearing Association and has received the association's highest honor.

In his research, Rosenbek focuses on the

**JEFF LOOMIS**, associate director of the Center for Telehealth and Healthcare Communications, received the Regent's Award from the North Florida Chapter of the American College of Healthcare Executives in the early career category. Recipients are recognized for their contributions to health-care management.



## VPHA

### MELANIE FRIDL ROSS

M.S.J., E.L.S., was named the new administrator of Chapters/Membership for 2004-05 for the American Medical Writers Association. The announcement was made at the 5,000-member organization's annual meeting in St. Louis. Ross is assistant director of Health Science Center News and Communications and senior producer and managing editor of Health in a Heartbeat, which airs on National Public Radio affiliates in more than 50 cities.



## VETERINARY MEDICINE

### JORGE HERNANDEZ

M.V.Z., Ph.D., an associate professor of epidemiology, received the 2004 International Educator of the Year Award from the UF International Center. Hernandez was one of 20 UF faculty members honored as outstanding international educators in a program UFIC began this year. Hernandez has served as director of the college's Office of International Programs since 2003. Under his leadership, the college established one of the only international offices of its kind for a veterinary college.



evaluation and treatment of adults with swallowing and speech disorders. He is currently investigating the use of transcranial magnetic stimulation in the treatment of swallowing disorders, a common occurrence after stroke, and is developing and testing behavioral therapies for aprosodia, the inability to express emotion through tone of voice, in patients with neurological damage.

"Among my earliest and most concentrated efforts as chair will be the encouragement of course development and the hiring and support of new, young researchers with present or the potential for future funding," Rosenbek said. "The men and women in this department are hard-working and creative. My enduring goal will be to let them know often and publicly that the future depends on them."



## Africa Calling

Drawn to once-in-a-lifetime opportunity, a UF student goes on leave to work in AIDS prevention

By Jill Pease

**W**hen first-year clinical and health psychology graduate student Shannon Senefeld was asked to serve as a technical adviser for HIV/AIDS programs in Africa, it was an offer that, ultimately, she couldn't refuse.

The decision to take a two-year leave of absence from her Ph.D. studies in the College of Public Health and Health Professions was a difficult one for Senefeld. Applying to graduate programs and selecting the right program had been a grueling process and she had firmly decided to put her professional career on hold while she pursued her doctoral degree.

"Then this position opened up," Senefeld, 27, said.

While it might seem like a radical departure to many, those familiar with Senefeld's background wouldn't be surprised by the pull this international opportunity had on her. She completed bachelor's degrees in French and political science from Indiana University and a master's degree in international development from George Washington University. In addition, Senefeld spent three years in Haiti, working primarily on HIV/AIDS projects, and held a four-month internship with the U.S. State Department in Zambia.

Senefeld was particularly attracted to the newly created technical adviser position because of her research interests in HIV/AIDS and other immunological or infectious diseases, as well as behavioral health. The prospect of helping to decrease rising infection rates in a vulnerable region of the world made it a once-in-a-lifetime opportunity for her.

With the support of program director Russell Bauer, Ph.D., a professor in the department of clinical and health psychology, Senefeld put her UF studies on hold.

"I supported her decision because, given her interest in providing psychological services to underserved populations, this represented a fabulous opportunity to gain real-world experience that she could then bring back to enrich not only her UF-based learning experiences but also our rural behavioral health program," Bauer said.

Senefeld, who left for Africa in January 2004, said she considers herself very lucky to have received such encouragement.

Senefeld began work for Catholic Relief Services, which offers community-based programs for people infected with HIV and AIDS that address prevention, AIDS-related stigma, poverty and burdens faced by women.

"Southern Africa has the highest HIV/AIDS prevalence rates in the world, with new infections occurring daily," Senefeld said. "I felt that I had the opportunity to come here at this point and try to make a positive difference."

Based in Lilongwe, Malawi, Senefeld is responsible for ensuring that all of the HIV/AIDS programming in a 12-country region is of the highest technical quality possible. She provides training to staff and partners; designs program proposals; writes manuals; and conducts field evaluations and operations research.

Senefeld and her colleagues are working to stem the high rates of infection in the sub-Saharan region of Africa. Of the 38 million people worldwide with HIV or AIDS, 25 million live in sub-Saharan Africa. Within this same region, 12 million children have lost at least one parent to AIDS.



Shannon Senefeld (lower right) recently conducted a training session on nutrition and living positively with HIV for these staff members from Catholic Relief Services and local community-based organizations that provide HIV/AIDS counseling and testing.

Despite these sobering facts, Senefeld is heartened by the mindset of the African people she serves.

"I'd say that it's the most hopeful place I've ever been," she said. "There are so many negative factors that could affect the people here every day. It's astonishing, honestly. In addition to HIV, there's malaria, tuberculosis, cholera and more. But the people here are happy and hopeful despite the poor health conditions. I've definitely learned as much as I've taught."

Upon her return to UF later this year, Senefeld hopes to jump back into her doctoral studies and is interested in pursuing a master's in public health. Her career goals include working in academia or for a research organization that would allow her to maintain overseas links while being based in the United States.

"I continue to remain hopeful that we'll manage to harness the rising AIDS and HIV rates in Africa," Senefeld said, "[so that] hopefully the type of opportunity I have here will never happen again." **P**

# Mission: Iraq

## A doctor saves lives in a war zone

By Leah Cochran

If you called Dr. Thomas Beaver a hero, he would most likely smile, shrug and reply that he is just like any doctor doing his job.

Just because he spent the summer doing his job halfway across the world in a volatile war zone doesn't make him different from any other doctor — or any soldier — for that matter. As a doctor, you save lives when you can. And like all soldiers in Iraq, he was just a normal guy serving his country.

A cardiothoracic surgeon at Shands at UF medical center, Beaver has been a member of the Army Reserves since 1991. He spent this past summer on a three-month tour in Iraq as part of the 933rd Forward Surgical Team. It was his first tour overseas.

"I joined after Operation Desert Storm because I was feeling patriotic and I thought I'd be willing to help out if something happened," Beaver said.

His duty was extended through the Reserve Component Unit of the Stop Loss Program, which the government implemented in 2002 to maintain enough troops to rotate in and out of the Middle East.

Although he was expecting to be mobilized, his departure came sooner than he expected. He was notified of his orders by e-mail on July 25, and boarded a 747 to Kuwait just four weeks later.

"It was surreal," Beaver said. He recalls going through airport security with weapons and being startled to hear a slight twist in the usual pre-departure announcement on the airplane's intercom: "Please put your tray tables up, your seats in the upright position and stow your weapons."

Beaver, a major in the Army Reserves, was in for many more surreal experiences during his time serving the country for Operation Iraqi Freedom.

He was stationed six miles outside of Tikrit at Forward Operating Base Speicher, an old Iraqi air base renamed for a lost American pilot who had carved his name on one of its walls during the first Gulf War.

The hospital where he worked was actually a series of large tents strung together. They were stocked with modern equipment and well supplied, Beaver said. His unit was also trained to set up small, mobile operating rooms near combat zones if needed.

For Beaver, performing trauma operations on both Americans and Iraqis was daily work, although he now regrets that he could not help as many Iraqis as he would have liked.

"There was an enormous need. Their whole medical system was down and so we couldn't take care of as many locals as we wanted to," Beaver said.

The highlight of his tour of duty was a civil affairs mission he made to a nearby city where he helped to distribute antibiotics, provided medical care and passed out candy to the children.

"Working with the kids was the most rewarding," said Beaver. "It makes you realize that kids are kids everywhere."

Anti-American feelings were never far away though; FOB Speicher was attacked by mortars frequently in the three months Beaver was there. The doctor also recalls operating on Americans injured by Improvised Explosive Devices.

"The most disturbing thing is that we lost a couple of young guys that were massively injured and we couldn't save them," said Beaver. "I have seen young men



PHOTOS COURTESY OF DR. THOMAS BEAVER

Major Beaver with other members of the 933rd Surgical Team travel to Afghanistan in a C-17 cargo plane.

with their limbs basically torn off. That was bad."

Before heading home, Beaver also spent a short time in Afghanistan when extra security was needed during the new elections.

The first week he was back home in the Shands operating room, Beaver performed three heart surgeries, a skill, he said, that came back to him as easily as "riding a bike."

While his skills remained fluid, Beaver admits that the transition between the two worlds is a difficult one to make.

"It's very disruptive. There is never a good time to mobilize but I feel that my partners here picked up a little extra call and slack," Beaver said. "They were very supportive of me going over."

Dr. Charles T. Klodell Jr., a surgeon that works with Beaver, agrees.

"I think the hospital and the university were very supportive of him," Klodell said, "the same as they have been for all the other physicians and nurses who have been called to service."

Beaver could be recalled to serve again in as few as 11 months. He keeps in touch with the members of his unit that are still in Iraq, sending them care packages of American goodies such as DVDs, candy and pork rinds.

He admits that he missed friends, family and Starbucks coffee while he was gone, but says that overall morale was very good.

"People just want to get it done right and then come back home," Beaver said. P

Medics at the 67 Combat Support Hospital load an injured patient onto a Blackhawk Helicopter for transfer to an Air Ambulance flight to Landstuhl, Germany.



## Proteins and aging, a new approach

By Linda Homewood

A UF pharmacy researcher is taking a novel approach in his study of the effects of protein oxidation on the brain during the aging process. Like an astronomer searching for specific stars throughout the galaxy, Laszlo Prokai, Ph.D., must first identify dozens of proteins out of millions.

The National Institute on Aging awarded a five-year \$1.3 million grant to Prokai, a professor of medicinal chemistry in the College of Pharmacy, to study the biochemical mechanisms that cause age-related deterioration in brain function through free-radical oxidative damage. This process, called carbonylation, results in a chemical change brought on by free-radical attack mostly within energy-producing mitochondria.

Prokai has discovered a way to streamline the protein search using mass spectrometer equipment together with his newly developed isotope-coded affinity-tag methodology, or ICAT — now under UF patent pending.

“The ICAT method has broadened the scope of identifiable proteins,” Prokai said. “Only a handful of all possible oxidation-susceptible proteins could be detected before. This new method will make it possible for us to discover hundreds.”

In the study of genomics, common research protocol was very tedious and limiting, Prokai said. Researchers have to sift through approximately 30,000 genes to gather data, which is not a simple task. In proteomic research — the study of proteins — the task becomes exponentially compounded because there are millions of proteins. To further complicate this research, whereas genes are like static blueprints, proteins have functions and the aging process does not affect all proteins, Prokai said.

“This makes the research multidimensional. Not only do we have to find the right proteins to study, we have to look even farther to examine parts of a protein to find out where the oxidation is occurring,” Prokai said.



PHOTO BY LISA BALTOZER

Laszlo Prokai uses this mass spectrometer in the HSC Protein Chemistry and Biomarkers Core Facility to conduct his research.

Prokai said the improved research technique is a stepping-stone to a bigger goal. In the future, he hopes to apply the understanding of age-associated carbonylation of brain proteins to discoveries in drug treatment or prevention of neurodegenerative diseases like Alzheimer's or Parkinson's and to treat strokes and brain injuries. **P**



PHOTO BY PATRICIA BATES MCGHEE

Steve Goodison has received a \$1.25 million NIH grant aimed at discovering and functionally testing putative metastasis genes in a breast tumor model that he and colleagues previously derived.

## Study of breast cancer advanced with million-dollar research award

By Patricia Bates McGhee

Steve Goodison, Ph.D., an associate professor and director of research in the department of pathology at the HSC Jacksonville, was recently awarded a \$1.25 million grant by the National Institutes of Health to study breast cancer.

The five-year investigator-initiated grant, which runs through 2009, is aimed at discovering and functionally testing putative metastasis genes in a breast tumor model that Goodison and colleagues previously derived.

Breast cancer, the second-most-common cause of cancer-related deaths among American women, results in nearly 42,000 deaths each year, according to the World Health Organization Mortality Database.

Although its detection and diagnosis continue to improve, in many patients breast cancer has already spread by the time the primary tumor is diagnosed. Despite significant advances in treating the primary cancer, predicting the metastatic behavior of a patient's cancer — and detecting and eradicating such recurrences — remains a major clinical challenge.

“We're interested in finding — and understanding — the genes and molecular mechanisms responsible for the metastatic efficiency that some tumor cells acquire,” Goodison said. “The overall goal of this research is to identify gene products that may provide biomarkers for improved prognostic assessment of breast cancer patients and may present novel targets for future therapeutic interventions.”

Collaborating with researchers from the University of Michigan's chemistry department, Goodison and his team will identify and test the function of genes involved in the metastatic phenotype of their breast cancer model. So far they have identified some 15 candidate metastasis genes, which will be tested individually and in combination for phenotypic evaluation.

“While we hope to contribute to the wealth of knowledge regarding the biology of tumor cells, our long-term goal is to provide information that will lead to the improvement of breast cancer management,” Goodison said. **P**



PHOTOS BY PATRICIA BATES MCGHEE

UF nursing educator/recruiter Norma Cooper (back row, center) meets monthly with the “Future Gator Nurses” in Carmen Reid’s kindergarten class at Long Branch Elementary School in Jacksonville as part of HELP, a new recruitment effort in the College of Nursing.



Future Gator Nurse Fanticous McNair waits while Cooper explains the day’s activity.

## It’s great to be a Florida (Future Nurse) Gator

By Patricia Bates McGhee

The third Wednesday of every month UF, nursing educator/recruiter Norma Cooper, M.S.N., R.N., prepares for a challenging outreach opportunity. Her goal is noble — to encourage students to consider nurse-midwifery as a career. Her handouts are visual — to captivate nonreaders. And her lesson plans are fast-paced — to target short attention spans.

Her audience? Twenty-four bright-eyed, bubbly 5- and 6-year-olds in Carmen Reid’s kindergarten class at Long Branch Elementary, one of Jacksonville’s 14 high-poverty elementary schools, according to the Duval County Public School Overview.

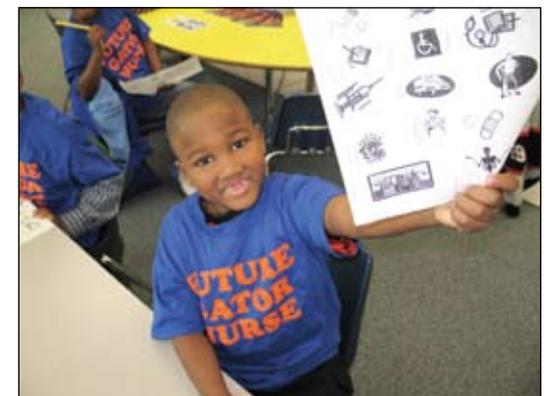
Cooper’s visits to Long Branch are part of UF Jacksonville’s Helping Educate Little People pilot project, one of several recruitment efforts in UF’s College of Nursing Nurse-Midwifery Program. Aimed at students from disadvantaged backgrounds and in medically underserved regions, HELP gives these children the knowledge and direction they need to make smart career choices and consider a possible future in health care, said Cooper.

“Our goal is to educate children early about health-care careers so they’ll be more able to meet the educational criteria required for further training and believe the goal is actually

attainable,” Cooper said. “HELP is a vital piece of our nurse-midwifery recruitment efforts.”

The Long Branch students have fun while learning the basics of what nurses do, from their young point of view. Cooper provides an hour of nursing career-related activities using oral communication tactics, coloring books, crayons, handouts and expressive art to stimulate and challenge the project’s “little people.”

“We discuss the different types of nurses, the training involved in becoming a nurse, nurses’



Nathaniel Brown proudly displays his completed work, designed to enrich the children’s vocabulary development.

“Peace-full” Jeremiah Newell takes a break from his assignment, designed to introduce kindergartners to the possibility of a future nursing career.

responsibilities, equipment and instruments they use, attire they wear and different workplaces,” Cooper said.

The program helps the children with academics, too.

“Not only is it an exceptional opportunity for enhancing vocabulary development,” said Lillie Granger, Long Branch principal, “but it also gives our students a chance to talk and think about college at an early age — something that will stay with them.”

The first time Cooper met with Ms. Reid’s kindergartners, she asked them what they wanted to be when they grow up.

“They immediately shouted out basketball player, football player, race car driver, lawyer and police officer—the professions emphasized in television’s highest-rated shows,” she said. “Now when I ask the same question, they enthusiastically chime in unison ‘Gator Nurse!’”

Programs like HELP can increase awareness of health profession shortages, especially in underrepresented minority populations, said Alice Poe, UF nurse midwifery coordinator and assistant professor.

“Our outreach to Long Branch is funded by a grant from the Human Services and Resources Administration and fits the goals of Kids Into Health Care, a federal program,” Poe said. “This project may help alleviate the shortage of minorities in nursing not only in Duval County but also in the state and nation.”

But the HELP project is more than recruiting minority kindergartners to be nurses.

“It’s also about showing children how a career in nursing can help make a difference in people’s lives,” Cooper said. “My goal is to challenge and educate these enthusiastic children about nursing and how it improves others’ lives and helps everyone’s — the nurse and the patient’s — quality of life.”

The year’s activities will culminate with a trip to Shands Jacksonville. “There we’ll reinforce the information the children have been exposed to about nursing careers,” Cooper said, “and dispel any fears they may have about hospitals.” Youngsters unfamiliar with nurses often relate nursing to negative experiences, like fear of hospitals and injections, she said.

The impact of HELP, which runs through May, will be evaluated based on faculty and administrative feedback and suggestions. Evaluators will use a picture tool to measure student interpretation and memory of information shared during monthly sessions. Cooper said HELP’s expected rating may result in the program becoming part of the curriculum and expanding to other grade levels. **P**



Coordinating the HELP program at Long Branch Elementary are (from left) Alice Poe, UF nurse midwifery coordinator and assistant professor; Norma Cooper, UF nursing educator/recruiter; and Carmen Reid, kindergarten teacher.



PHOTO BY LISA BALTOZER

The College of Medicine's division of nephrology, hypertension and renal transplantation recently honored major donors to its new Kidney and Hypertension Research and Education Fund by unveiling a commemorative plaque outside the division's clinical offices in the Shands first-floor lobby. The fund was established to stimulate investigator-driven clinical research programs. Taking part were (from left) donor R. Glenn Davis, M.D., of Dialysis Clinic Inc., UF department of medicine Chairman Edward R. Block, M.D., donor Charles P. Hayes Jr., M.D., of Dialysis Clinic Inc., donor George F. Schreiner, M.D., Ph.D., of Scios Inc., and UF nephrology division chief Richard Johnson, M.D. Not present was donor Louis Gregory, M.D., of Dialysis Clinic Inc.



PHOTO BY TOM NORDLIE

Santa Claus got a little extra help from the Office of the Senior Vice President, Health Affairs in December. To brighten the holidays for families at the Gainesville Ronald McDonald House, office staff (from left) Edra Ijames, Regina Richmond, Audrey Duke and Cheryl O'Quinn collected donations of toys, food, phone cards and other items from SVPHA personnel, who first displayed them around the office holiday tree.

# THE POST 02•05

**Published by**

UF Health Science Center  
Office of News & Communications

**Senior Vice President for Health Affairs**

Douglas J. Barrett, M.D.

**Director, News & Communications**

Tom Fortner

**Editor**

Denise Trunk

**Senior Editors**

Melanie Fridl Ross, John Pastor

**Art Director**

Lisa Baltozer

**Staff Writers**

Tracy Brown, Sarah Carey, Tom Fortner, Linda Homewood, Lindy McCollum-Brounley, Patricia McGhee, Tom Nordlie, John Pastor, Jill Pease, Melanie Fridl Ross, Denise Trunk

**Contributing Writer**

Rocco Castoro

**Support Staff**

Cassandra Jackson, Beth Powers, Kim Smith

**Intern**

Leah Cochran

The POST is the monthly internal newsletter for the University of Florida Health Science Center, the most comprehensive academic health center in the Southeast, with campuses in Gainesville and Jacksonville and affiliations throughout Florida. Articles feature news of interest for and about HSC faculty, staff and students. Content may be reprinted with appropriate credit. Ideas for stories are welcome. The deadline for submitting items to be considered for each month's issue is the 15th of the previous month. Submit to the editor at [dtrunk@ufl.edu](mailto:dtrunk@ufl.edu) or deliver to the Office of News & Communications in the Communicore Building, Room C3-025.

[www.news.health.ufl.edu](http://www.news.health.ufl.edu)

