

University of Kentucky Research
Fall 2004

Odyssey

**America's
Kids in the
Middle of
an Epidemic**



A Big Fat Problem

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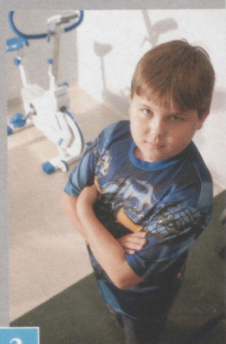
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Cover Story

A Big Fat Problem

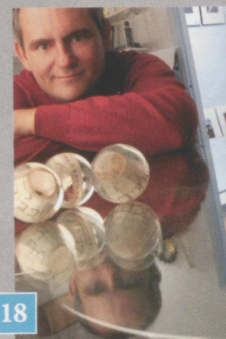
Around 30 percent of children ages 6 to 11 in this country are overweight. Among adolescents, 30 percent are overweight and nearly 16 percent obese. University of Kentucky scientists and clinicians are more active than ever in fighting what the CDC is calling an "epidemic." From basic science to strength-training to long-term weight-loss programs, UK researchers are helping our kids go from fat to fit. **2**



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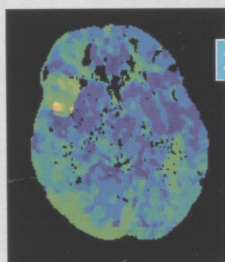


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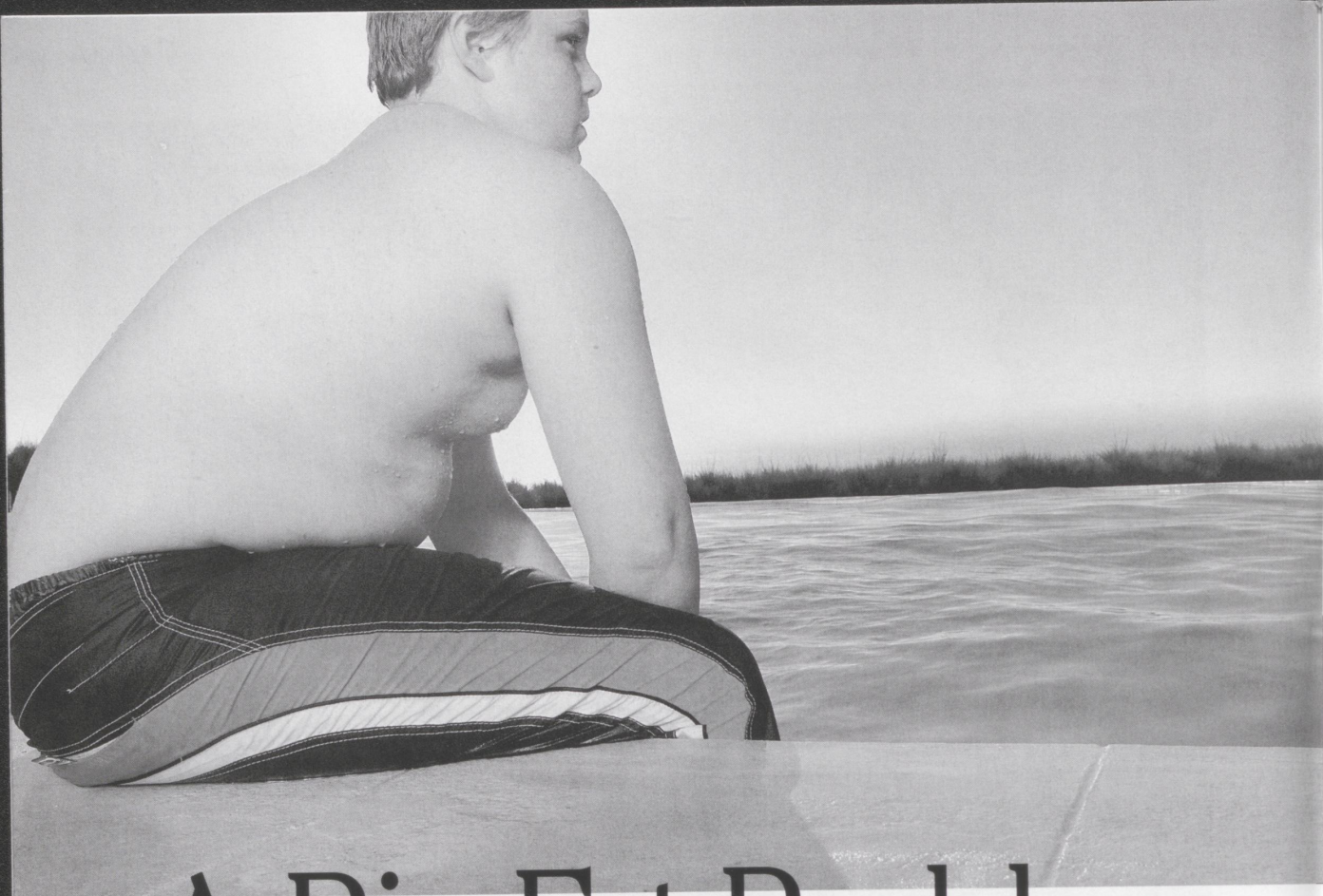
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A Big Fat Problem

From basic science to strength-training to long-term weight-loss programs, UK researchers are working to help our kids go from fat to fit

Written By Jeff Worley

Our country's children are fat. No, make that FAT. And unless you've been living in a cave, you know this.

The Surgeon General and the Centers for Disease Control and Prevention are now using the terms "epidemic" and "crisis" to describe our children's collective waistline. Our problem is immense: our problem is immensity.

In June, *Time* magazine ran a 27-page article, titled "America's Obesity Crisis," citing a blizzard of depressing statistics for both adults and children. And though the numbers for adults are shocking—two-thirds of U.S. adults are officially overweight and about half of those have moved on to full-blown obesity—the obesity numbers for adolescents and children are mind-numbing.

Twenty years ago in the United States, 5 percent of kids were overweight; today 15 percent are and another 15 percent are headed that way. According to the American

Obesity Association, approximately 30 percent of children (ages 6 to 11) in this country are overweight, and among adolescents (ages 12 to 19), 30 percent are overweight, and nearly 16 percent are obese, as determined by the body mass index percentile. The prevalence of obesity has quadrupled in the last 25 years among both boys and girls.

In Kentucky, things are even worse. As reported by Jim Warren and Mary Meehan in a *Lexington Herald-Leader* article last June, Kentucky became the fourth fattest state in the nation this year. Nearly a quarter of Kentucky's adults pack around 30 or more excess pounds, and a quarter of Kentucky's pre-schoolers—and almost half its sixth graders—are overweight, or at risk of becoming so. More than 14.5 percent of Kentucky high schoolers are overweight, compared with 10.5 percent nationwide, according to the Kentucky Obesity Epidemic 2004 report, published by the Kentucky Department for Public Health. Kentucky, the

Tiffany Duncan, a senior at Paul Laurence Dunbar High School in Lexington, has lost 45 pounds since joining UK's Health Management Resources (HMR) program last January.



What Is Body Mass Index?

$\frac{\text{weight in pounds}}{(\text{height in inches})^2} \times 703$

Example:

$\frac{\text{weight} = 182 \text{ lbs.}}{\text{height}^2 = (71 \text{ in.})^2} \times 703 = 25.4 \text{ BMI}$

Note: Body mass index is a more accurate measurement than weight because it takes into account that short people tend to weigh less than tall people. But it's not perfect: The BMI of extremely muscular athletes is often in the obese range.

BMI	Status
Below 18.5	Underweight
18.5-24.9	Normal
25.0-29.9	Overweight
30.0-39.9	Obese
40 and above	Morbidly Obese

report concluded, is raising the most unfit generation in the commonwealth's history.

Our kids weren't always so fat. What happened?

"The statistics out there for kids and adolescents are just frightening," says James Anderson, longtime professor of internal medicine at the University of Kentucky and a weight-loss expert. "I think one major factor contributing to the explosion of obesity in children in this country is the ready availability of inexpensive, tasty foods. You know, you go into homes and you see snack food all over. You see candy. You see chips. You see crackers. You see all these high-fat foods that are just hard to get away from."

In a sense, we're the victims of our own abundance. Food, both nutritious and non-nutritious, falls easily into our grocery carts and is literally at our fingertips. All we have to do is punch up a pizza number, and minutes later someone's at the door with a steaming pie.

Secondly, Anderson says, there has been a systematic reduction in physical activity. Kids rarely walk to school anymore—parents will drive their kids a half-block with the excuse that walking isn't safe. Add to this the fact, as reported by *Time*, that in 1969, 80 percent of kids played sports every day; today 20 percent do. In most gym classes in our public schools, kids are aerobically active for just three minutes. If they have gym at all. In one Lexington public school, some seventh and eighth graders take no gym classes at all.

"The third thing that impacts on the first two factors is the electronic age," Anderson continues. "Children are watching 2½ hours of television a day. Teens are on the Internet for hours instant messaging. Then, there are video games. I think these things are the magnets that have contributed to the lack of physical activity and also, of course, these passive activities enhance the appeal of snack food."

But these are children and teens. They live at home under rules made by their parents, right? So, why are kids being allowed to do things that set them on the road to obesity?

More than 14.5 percent of Kentucky high school students are overweight, compared with 10.5 percent nationwide.

James Anderson, who has helped children and teens take off weight for over 20 years through UK's HMR program, talks with participant Tiffany Duncan.



Too many parents, directly or tacitly, give their children permission to stay riveted to various screens for long periods of time and to forego exercise, says Sharon Barton, an associate professor of nursing at UK who has worked with school-age children for 25 years. And Barton, an expert in infants' and children's nutrition, has a lot to say about parental permissiveness and how it leads to obesity among kids and teens.

"I've found that in working with children who are overweight or have eating issues, parents often think that children *deserve* particular food items. They need popsicles. They need ice cream. They need Little Debbie Snack Cakes. One physician I know who works with overweight kids will pull parents aside and say, 'Would you purchase cigarettes and give them to your five-year-old? Well, you're essentially doing the same thing by giving them Little Debbies.'"

The problem is not only parental passivity, Anderson says. In addressing the obesity problem, even professionals on children's and teens' health tend to drop the ball.

"Unfortunately, in our current mind-set, we are giving children permission to become obese," says Anderson. "We're so worried about traumatizing them by saying they're overweight. Too many of our 'experts' in children and adolescent behavior and nutrition say, 'Let's just watch. Let's not make a diagnosis right now. Let's just watch.'"

"The current authorities, the experts at the NIH and the

American Pediatric Society, for example, say, 'Well, if you label a child obese, you may trigger anorexia. You may cause an eating disorder, so let's just not mention it.' Ignoring the problem, Anderson adds, is no solution because it's fairly easy to predict which obese teens will become obese adults. If a teen is above the 85th percentile on the body mass index profile, that teen has about a 95 percent chance of being an obese adult.

Then there are the schools. Fifty years ago, very few schools around the country had vending machines. If you wanted to have a Coke with lunch, you had to bring it with you from home. Now, flashing like a row of Las Vegas slots, vending machines beckon from the hallways of our schools. And the products in these machines, their allure to a captive audience enhanced by billions of dollars of advertising each year, tend to contain only empty calories that translate into fat.

Schools in particular "have become nutritional disaster areas," says David Ludwig, a Harvard pediatrician who directs the obesity program at Children's Hospital in Boston. "We as a society have abdicated responsibility for teaching kids how to eat right and how to have an active lifestyle." Ludwig's research shows that for every additional daily serving of a soft drink, a child's risk of becoming obese rises 60 percent.

"There are lots of societal factors contributing to obesity,

and since children are so vulnerable and change the most rapidly, they are the most visible in our country's obesity explosion," Anderson says. And there are societal costs.

What Are the Costs of Obesity?

Remember the fattest kid in fourth grade? The one who was the butt of practical jokes and the target of ugly nicknames? The one always picked last on the playground? Obesity, clearly, can be a boulder in the road to a child's socialization and self-esteem. The slings and arrows of words directed toward an overweight kid can leave permanent

psychological scars.

It wouldn't be such a big deal if the problem were only a kid's confidence or looks. But there's a lot more to it than that. According to the CDC, our nation spent an estimated \$75 billion last year treating health problems of children and adults related to obesity. In 2003, 6.2 percent of all Kentucky's medical expenses went to treating obesity-related health problems. As reported in the *Lexington Herald-Leader*, Medicare picked up about \$270 million of that tab, and Medicaid, which serves the poor, shelled out another \$340 million. This works out to a cost of about \$85 for every

"Children are watching 2 1/2 hours of television a day. Teens are on the Internet for hours instant messaging. There are video games. I think these things are the magnets that have contributed to the lack of physical activity and also, of course, these passive activities enhance the appeal of snack food."—James Anderson



man, woman and child in our state.

And as we've known now for a long time, obesity is a fertile breeding ground for chronic diseases like type 2 diabetes, cardiovascular disease and arthritis. It is causally connected to cancers including endometrial cancer, some breast cancers, colon and kidney cancer; and obesity also instigates sleep apnea, gall bladder disease, back and joint disorders, and depression.

"And this is just the short list for where obesity can lead," says Anderson, who thinks that in his work with overweight children and teens, diabetes is the most important concern. "We used to see very few children or teens with type 2 diabetes, but now it's alarming how many adolescents are developing type 2." The obesity-diabetes link is so strong that his colleague L. Raymond Reynolds, an associate professor of internal medicine at UK, often uses the term "diabesity" to convey how interrelated they are.

Type 2 diabetes results from insulin resistance, a condition in which the body fails to use insulin properly, combined with relative insulin deficiency. (Type 1 diabetes results from the body's failure to produce insulin, the hormone that unlocks the cells of the body, allowing glucose to enter and fuel them.) Most Americans diagnosed with diabetes have type 2. Get this: Prior to 1990, of all cases of diabetes in children, just 4 percent were type 2; now, type 2 diabetes in children and adolescents accounts for a whop-



Health Management Resources (HMR), headquartered in Boston, specializes in meal-replacement products that are low in calories.

ping 45 percent of cases, according to the American Diabetes Association.

Leslie Scott, a pediatric nurse at the University of Kentucky Medical Center who earned a Ph.D. in nursing from UK earlier this year, is an expert on type 2 diabetes in children. "I've always loved working with kids," says Scott, who has been a clinical pediatrics faculty member here since 1998. "When I became a nurse practitioner in 1995, the children we followed in the pediatric endocrine clinic primarily had type 1 diabetes. But even then we were seeing significant increases, almost year-to-year, in the number of children with type 2 diabetes."

Scott, who became a pediatric diabetes nurse educator in 1994, was inspired to dedicate herself to a career of diabetes-related work for a reason very close to home. Her mother had diabetes from the age of 10 and lost her sight at 32 as a complication of the disease. Scott, in living with her mother's disease and being in regular contact with diabetes educators through the years, learned that education really can make an impact on how people manage the disease.

"I wanted to try to prevent kids from suffering complications like my mother did at such a young age. I thought that if we could affect a family at that level, at a young age, and implement good habits and good management skills, we could prevent complications down the road."

Preventing health problems. This is the goal of dozens of clinicians and researchers at UK working to better understand childhood and adolescent obesity. This work involves

disciplines, departments and colleges all across the UK campus. Here are a few of the projects and programs currently under way.

Special Meals to Melt Away the Pounds

James Anderson has been helping children and teens take off weight for over 20 years, and he admits he and his staff have had their share of challenges.

"I've seen 10-year-old, 200-pound children. I've seen an 11-year-old, 300-pound girl, a 350-pound 12 year old, and a couple of adolescents who weighed 500 pounds," Anderson says. "And it's been very gratifying to work with these kids through our HMR program and see them shed significant weight."

HMR is the acronym for Health Management Resources, a national health-care company in Boston that specializes in programs for weight and health management. HMR provides programs to health-care professionals in more than 400 medically supervised weight-management programs nationwide. Anderson heads up UK's HMR program, which began in 1985.

"The great thing about using these products," Anderson says exuberantly, "is that this way we don't have to put anyone on a liquid diet, and there are quite a few meal choices." Entrees, with vegetables, include chicken creole, turkey chili and chicken pasta parmesan, and are typically 220 calories. Bars (160) and milkshakes (120) are also

available. "This is the easiest diet to follow, because it requires so few decisions about what to eat."

Here's how the program works. Each week while on this low-calorie diet, the patients attend a 90-minute group session led by a trained health educator. In these sessions, some of the basic program fundamentals are taught: specific "how to's" of weight loss, including easy ways to lower fat and calories in the diet without feeling hungry, and

attend weekly class during this time.

"The results were really impressive," Anderson says. "Weight loss in this group averaged 33.6 pounds, with 31 of the teens losing more than 10 percent of their initial body weight and 16 kids losing more than 20 percent." For 16 of the adolescents who had BMIs over 40, which put them in the morbidly obese class, weight loss averaged right at 50 pounds. One adolescent lost 176 pounds during this 18-

Twenty years ago in the United States, 5 percent of kids were overweight; today 15 percent are and another 15 percent are headed that way.

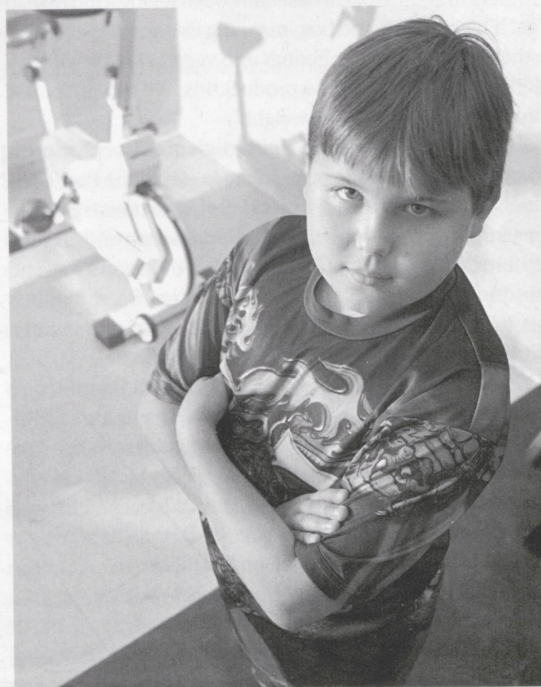
simple strategies to build physical activity into the daily routine.

The weight-loss phase of the program comes next. This typically lasts for around 18 weeks. The last stage is maintenance, during which participants attend weekly classes to continue to receive support while learning additional, simple strategies for successful long-term weight management. A personal "coach," Anderson or one of his staff, works closely with each patient to practice healthy weight-management skills until they become second nature. The cost to participate in this program depends on the level of medical supervision required.

Anderson is pleased at the results of the most recently completed program, in which UK partnered with weight-loss experts in HMR programs at the University of Kansas Medical Center in Wichita, in Dallas-Fort-Worth, and Springfield, Illinois.

This study included 49 adolescents—11 males and 38 females—age 12 to 18. The participants averaged BMIs of 36.8, which put all of them in the "obese" and "morbidly obese" categories. After attending weekly education classes and getting information about HMR meal replacements as described above, the participants began the weight-loss phase of the program. For 18 weeks, they were allowed from 1,000 to 1,500 calories a day from the meal replacements, vegetables and fruits, and the teens continued to

Cody Stone, 13, works off excess weight in UK's PEP program at the Seaton Center. See Cody in action on page 13.



week program and subsequently, after she went into the maintenance phase, lost another 75 pounds.

"The ringing, self-evident conclusion," Anderson says, "is that self-motivated adolescents can lose substantial amounts of weight in an intensive weight-loss program such as this." These results were presented at an annual nutritional conference in San Diego in 2002.

Self-motivation is the number 1 indicator of a teen's, or

behind his neck, and says, "Let me share an anecdote with you.

"In 1986, we enrolled a 13-year-old girl in our program. She weighed 340 pounds. I had never treated anyone that young who weighed so much. We designed a safe nutrition program for her using our meal replacements, giving her about 800 to 900 calories a day. She lost 180 pounds—let me repeat that: 180 pounds—in a little over a year. She went

"A parent can be an asset or a saboteur. Think about it: Somebody buys the groceries, somebody brings the food into the house, somebody cooks the food. I want to get the family to the point where they say, 'We as a family will make changes.'"—Joan Griffith

child's, probability of success, Anderson adds. "You absolutely have to be disciplined. You have to"—and here Anderson sounds like a baseball coach telling a kid how to get a hit—"stay in the box, meaning that you have to stick strictly with the HMR offerings and vegetables and fruits. If kids and teens stay in the product box, we can guarantee that they're going to lose weight."

This may sound easy; oftentimes, it's not. Peer pressure is one obstacle. What if you're trying to stay in the box, but a friend sitting across from you at Dairy Queen taunts you into having a couple of bites of his hot fudge sundae? "It's tough to turn away from temptation like this," Anderson says, "and the problem isn't really a couple bites of ice cream as much as a teen then saying, 'Well, I've already blown my diet today, so I may as well have a few bites more.'"

Parental involvement is a huge factor, too, in a teen's success at belt-tightening. Even though parents are encouraged and coached to be weight-loss partners in this program, that can sometimes be psychologically tricky. "Usually, if a child or adolescent is obese, one or both parents and grandparents are also obese," says Anderson. "So when the teen wants to break out of that mold, it's an affront to the parent. 'So you don't like the way we are? You don't want to be like us?' It's tough."

Asked why, at the ripe retirement age of 68, Anderson continues to do this work, he smiles, clasps his hands

from 340 to about 160. That flabbergasted me. I happened to run into her in Winn-Dixie two weeks ago. She's 32 now and her usual weight, she told me, is about 210 pounds. OK, it's not 160, but she's still keeping off more than two-thirds of the weight from when she was 13. I think we did alter the course of her life, and, yes, that makes me feel pretty good."

For information about UK's HMR program, call 859/422-4671.

Want to Lose Weight? Here's a Radical Idea: Eat Less and Exercise More

Joan Griffith, who strikes you immediately as direct and knowledgeable, is a soft-spoken woman. But she carries a loud message: She wants the kids and teens she works with to "own their bodies." And she's formed a team to help them do exactly that.

No, make that TEAMS.

"We started a clinic here last January that we call TEAMS—Teens Enjoying Active Management Systems," says Griffith, who came to UK two years ago after a distinguished career as an inpatient and outpatient pediatrician in the U.S. Air Force (she wound up being a colonel). The clinic, dedicated to helping children, adolescents and young adults find healthy weight



solutions, is run out of the UK Department of Pediatrics.

The clinic is for all teens. Patients may be self-referred or referred by their primary-care physician, Griffith explains. "The cornerstones of the program are lifestyle changes, physical activity, counseling, and dietary adjustments." So far, the program has enrolled 50 patients, some from as far away as 2 1/2 hours from Lexington.

When teens are referred to this program, here's what happens. Griffith talks with them in the initial session, asking the most basic questions about their reason for wanting to join the program. She also gathers additional information, completes a physical examination, and, when indicated, suggests lab screening for thyroid, lipid profile and blood sugar. The patient and family meet with a dietician who provides nutritional counseling. Other clinic consultants include an exercise physiologist and psychologist who assist in developing individually tailored exercise plans and assessment of emotional issues that may be affecting eating habits and self-image.

"After this screening, we have the boy or girl come back in two to four weeks with only one goal: no weight gain," Griffith explains. "From there on, we want them to lose a pound a week."

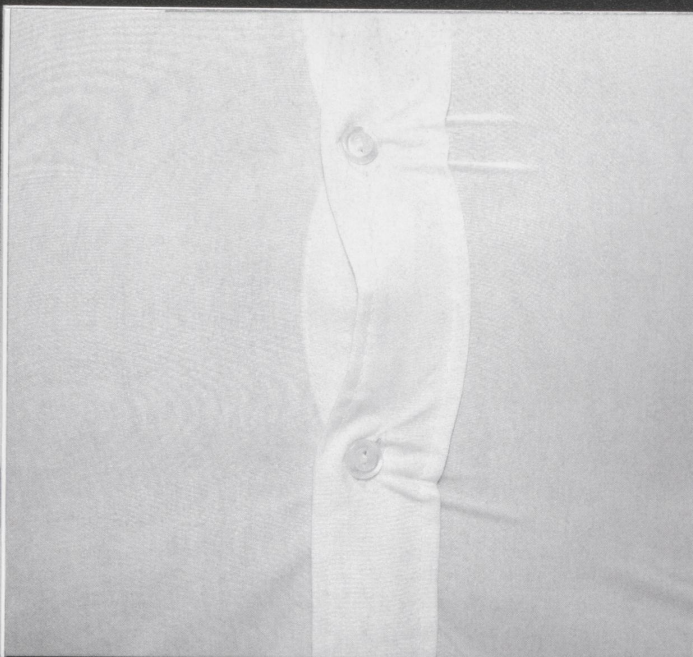
The participant's parents, who also come to the meeting with the dietician, are absolutely crucial to any weight-loss success, Griffith says, and so are involved from the start. "A

Joan Griffith, who joined UK's Department of Pediatrics two years ago, heads up the new TEAMS clinic—Teens Enjoying Active Management Systems. "The cornerstones of the program are lifestyle changes, physical activity, counseling, and dietary adjustments."

parent can be an asset or a saboteur. Think about it: Somebody buys the groceries, somebody brings the food into the house, somebody cooks the food. I want to get the family to the point where they say, 'We as a family will make changes.'"

Although no weight-loss statistics have yet been generated from the current group of participants, Griffith says that TEAMS has been so well-received that program hours, beginning last September, have been extended.

"We know that obesity represents the merger of many factors," says Griffith. "There's an energy imbalance. We have to watch calories, but also have to watch how we expend the energy those calories give us." She believes one of the most important things she and her staff can do, especially in concert with colleagues like Jody Clasey, an associate professor in UK's Department of Kinesiology and Health Promotion who is the primary exercise physiologist in the TEAMS program, is to get kids and teens to realize that exercise is fun. "Exercise is obviously essential to weight



one young man back at Andrews Air Force Base who was overweight and despondent when he first came to see me. Then after nine months of working hard to lose weight, he stopped in the clinic. 'Dr. Griffith, do you know what the other students are calling me now?' he said. 'No, what?' I said. 'They're calling me "slack butt." 'Cause I've lost so much weight.' He'd lost so much his clothes didn't fit anymore. He lit up my room with his smile. So my theory is:

Flashing like a row of Las Vegas slots, vending machines beckon from the hallways of our schools. And the products in these machines, their allure to a captive audience enhanced by billions of dollars of advertising each year, tend to contain only empty calories that translate into fat.

loss," Griffith says. "We've got to do what we can to make these kids enjoy exercise. Repeating the words of a young teenager involved with the local Health Department TWEENS Program, Griffith says her motto is 'Make it fun and they will come.'"

Along with encouraging physical activities the girl or boy already enjoys, Griffith referenced the book titled *Forgotten Neighborhood Games: Get Kids Back Outside and Loving It* by Scott Strother, as an excellent source of neighborhood games that kids used to play after school or after dinner. She hopes the book will spark some interest in "being outdoors and moving."

Griffith, a board-certified pediatrician since 1985, admits that she once had a more passive attitude toward childhood and adolescent obesity.

"My theory used to be, if the family didn't come to me asking for my help, there was no reason to do anything because without family involvement and support, it wasn't going to work. I no longer believe that. I believe now that legally and medically, we as a society have to get involved. We would never think of turning our eyes if we saw a kid who was malnourished, and we need to realize that severe obesity is a form of malnutrition, too."

Over the years, Griffith has seen her share of happy results from the children and teens she's worked with. "I remember

One slack butt at a time."

Anyone 21 years of age or younger is eligible to participate in the TEAMS Program. To join, a child or adolescent can be referred by the primary-care provider, or parents can contact the program directly at 859/323-5643.

A Gym of Their Own

Not so long ago, common wisdom said that kids shouldn't pump iron. This was also the long-stated policy of the American Academy of Pediatrics (AAP). Kids just weren't developed enough and could be easily injured by this type of activity, the reasoning went. They needed to wait until muscle and bone developed.

Now, that's changed. Three years ago, the AAP revised its policy, stating that if proper techniques are used and precautions taken, preadolescents can benefit from strength training. This reversal was music to Jody Clasey's ears, especially since she already knew a little about kids and strength training.

"What we have in place at UK now in the newly developed Pediatric Exercise Physiology (PEP) Lab located in the Seaton Center are special kid-sized exercise machines. We have the gold standard in this equipment," says Clasey, an unabashed cheerleader for exercise. She comes across as the type of woman who, if she were your morning jogging

Jody Clasey, an associate professor of kinesiology and health promotion, hopes to expand UK's Pediatric Exercise Physiology lab in the Seaton Center so even more overweight kids can slim down through this exercise program.

partner and you tried to beg off, would pull you out of bed anyway and make you go running with her.

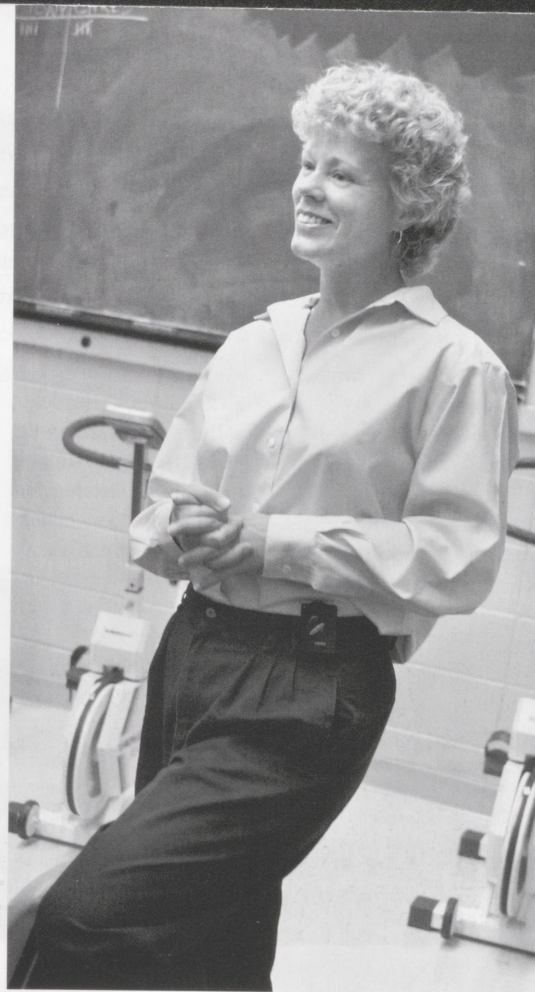
"Using these smaller machines, the preadolescents in our program can do leg presses, leg curls, bicep curls, lat pull-downs, bench presses, shoulder presses, and a seated row. Sits ups are also a part of the regimen," says Clasey, who teaches undergraduate and graduate courses in exercise physiology.

"Children aren't just small versions of adults—they're physiologically and metabolically unique." This equipment was purchased over two years ago with funding provided by the Building Interdisciplinary Research Centers in Women's Health fellowship program and UK large-equipment grants.

These aren't just any kids who show up in the PEP lab to huff and puff for three one-hour sessions a week for 10 weeks. The children Clasey works with in this study are all 7 to 11 years old and have a body mass index greater than the 95th percentile based on age- and sex-specific norms. According to a screening requirement, none of the children can show any signs of puberty. In Clasey's program, diet is being monitored but no diet is prescribed—only programmed exercise.

The children in this study don't have far to go if they need help or advice. The training ratio is no greater than one instructor to two children, though Clasey says, happily, that often the children get one-on-one supervision: "We make sure the kids are going through proper breathing technique and proper lifting technique when they're being tested or during training." Other key experts assisting with this study include Kent Adams, associate professor of health promotion, physical education and sports studies at the University of Louisville, and UK grad student Chris Holian.

All children recruited for the study first undergo a physical examination performed by a pediatrician and a body composition analysis involving underwater weighing, total body water analysis and bone scans to measure the relative compositions of muscle, fat, water, and bone in their body. "We need these measurements, and we've done everything we can to make them kid-friendly," Clasey says. "Rather than taking blood samples for the total body water analysis, for example, we just have the kids breathe through a tube submerged in methanol and dry ice that freezes the moisture in the breath. We can get plasma concentrations that way without having any needle sticks involved." Among



other things, these measurements allow Clasey to track changes in the children's body composition.

Though this study isn't complete and she and her staff haven't crunched the final numbers, Clasey says physical changes in the obese kids are noticeable.

"Truthfully, I'm amazed at the body composition changes. Even though one child has gained eight pounds while he's been in the study, he went from a husky 14 pant size to a regular size 11. Another child had completed the intervention study and been away from us for several months. When we called him back for another study, I expected to recruit him as an obese child, but now he fits the lean criteria. I said to his mother, 'What have you been doing?' She said, 'Your program jump-started my whole family. We now grocery-shop together, the children read product labels, and we eat dinner together. Exercise has become a part of our daily routine.'"

Clasey knows that this program works. The PEP lab currently has several ongoing studies involving both lean and obese children, and she's excited about its potential in the years to come. The hobgoblin is funding for the lab. There are, she says, some efforts under way to seek endowment funding so that the lab can continue and grow.

To spread awareness of what the lab offers, Clasey leapt at the chance recently to meet with the governor's wife, Glenna Fletcher, who has made a commitment to support efforts to combat childhood obesity. "Mrs. Fletcher has publicly stated her concerns about obesity in general and the related health problems and health-care costs associated with obesity [Glenna Fletcher is a registered nurse and has devoted much of her time to encouraging and promot-

obesity, will also participate in this program.

"I'm pleased that the work Kent and I have been doing regarding prevention and intervention strategies related to childhood obesity is receiving attention and will increase awareness. It's an honor to be able to represent UK in this way and bring some focus to the research programs ongoing in our state," Clasey commented.

Anyone in the Lexington area interested in information

"The mother of one of our kids who'd lost significant weight said, 'Your program jump-started my whole family. We grocery shop together, the children read product labels, and we eat dinner together. Exercise has become a part of our daily routine.'"—Jody Clasey

ing healthier life styles for all Kentuckians], so we wanted to tell her about our efforts at UK." Fletcher met with Clasey and several faculty members from the College of Education and, according to Clasey, it was a fruitful meeting.

"We discussed our past, current and future plans to fight childhood obesity. She was very interested in helping to facilitate efforts across the state to combat obesity by expanding our knowledge and providing resources to assist both children and adults. Perhaps, with the first lady's help and support from others, that can become a reality," Clasey says.

In the meantime, she is pleased with recent news that she has become a HERO.

In September, the Louisville Science Center announced that Clasey has been chosen as one of its KY-HEROS (Kentucky Health Education Rural Outreach Scientists). As a result, her collaborative research into health issues associated with childhood obesity will be transformed into an educational exhibit at the Louisville Science Center for the next two years. The HEROS program is funded by a Science Education Partnership Award from the National Institutes of Health.

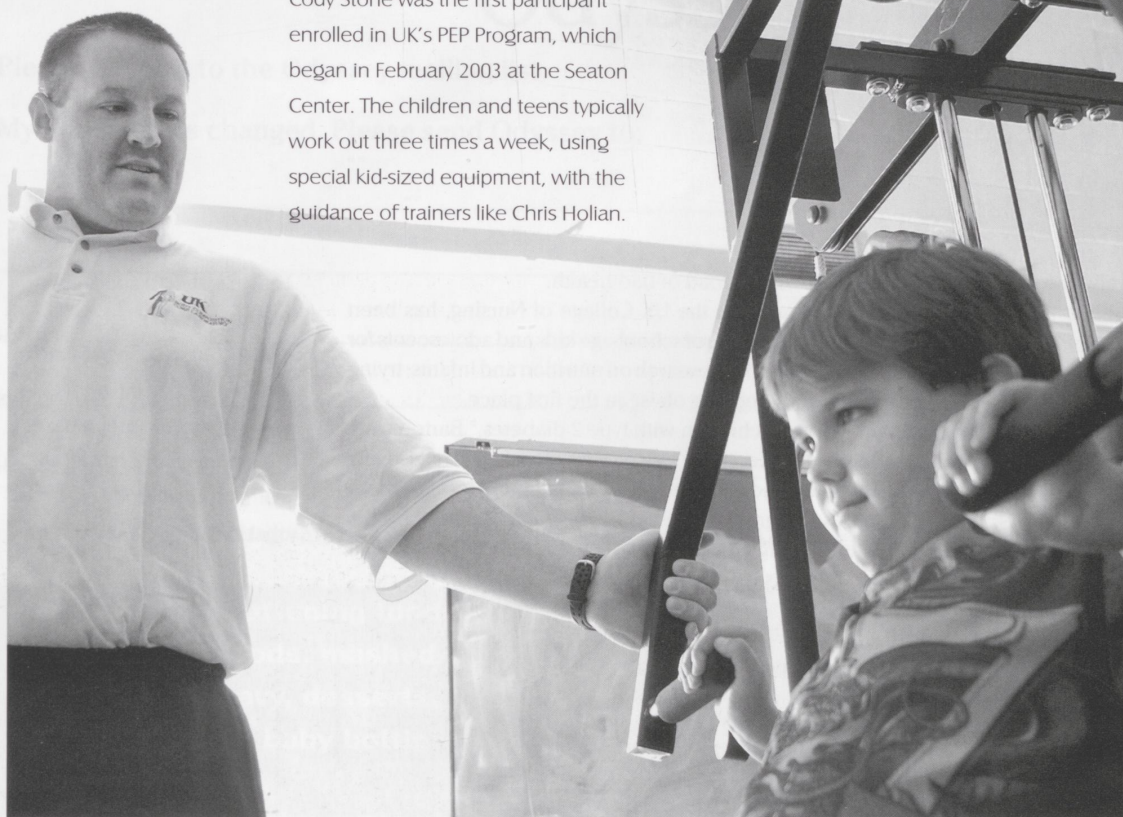
Clasey will be one of four Kentucky scientists whose work will be featured at the science center. Kent Adams, a frequent collaborator with Clasey on a number of research initiatives concerning children's physical development and

on Clasey's studies should call the UK PEP lab at 859/257-4867 or 859/257-1597.

Detecting Type 2 Diabetes: A New Approach

With type 2 diabetes in children on a rampage, wouldn't it be helpful if there were a clear marker for a kid's propensity to develop type 2? Well, there is. And UK's Leslie Scott in the College of Nursing has completed a study on this telltale mark and its potential as a screening tool for the disease.

"I've been looking at what's called Acanthosis Nigricans," says Scott, who recently completed her Ph.D. in nursing at UK and has been a pediatric diabetes nurse educator at UK since 1994. "And unless you have diabetes or know someone who does, you may have never heard of this. It's a skin condition that is symptomatic of high insulin levels in the body and is frequently associated with obesity. It's a darkening and thickening of the skin that can appear where skin-to-skin contact is made, but is found most often on the back of the neck." Parents often try to wipe this mark off, thinking it's dirt. Some studies indicate that certain populations such as African-American, Pima Indian and Mexican-American children are tagged with this mark more often—and have a higher prevalence of type 2 diabetes—than the national norm.



Cody Stone was the first participant enrolled in UK's PEP Program, which began in February 2003 at the Seaton Center. The children and teens typically work out three times a week, using special kid-sized equipment, with the guidance of trainers like Chris Holian.

It is important to note this condition, Scott says, because these markings can help identify children and adolescents who run the risk of developing diabetes. Once young people at risk are identified, the necessary measures to lower insulin levels and reduce the risk of developing type 2 diabetes can be taken. "The only way this mark will fade is through exercise and proper nutrition."

Scott's idea of intervention grew into quite an ambitious project. "Elementary school nurses do height and weight screenings annually as part of regular school-based health, so I asked the medical director of the Healthy Kid's Clinics within the Fayette County school system if he thought that looking for Acanthosis Nigricans on the back of the neck could also be included as part of these screenings," Scott explains. The director thought it was a good idea and gave her the go-ahead.

Scott decided to focus her study on four school-based clinics, with the end goal of trying to determine by the presence of this marker how many children would benefit from further screening for type 2 diabetes. During the 2000-2001 academic year, she trained school nurses to identify Acanthosis Nigricans on the back of the neck of 4-to-12-year-old school children in these clinics. A total of 1,164 students were screened. Scott then reviewed the medical records of this group, looking for relationships between the presence of Acanthosis Nigricans, ethnicity, gender, age, family his-

tory of diabetes, and body mass index.

"In doing this work, my biggest surprise was the number of at-risk kids we found—already overweight or at risk for being overweight." In Scott's study, 39 percent of the children screened had BMIs greater than the 85th percentile, and 22 percent had BMIs above the 95th percentile.

"No, let me replace the word 'surprise' with the word 'shock,'" Scott says. "National studies were quoting that only 11 to 13 percent of kids were overweight in that age group. We found 22 percent—almost double what national studies are reporting."

Acanthosis Nigricans was identified in 26 percent of the kids, 49 percent of whom identified a family history of diabetes. According to the American Academy of Pediatrics and the American Diabetes Association screening guidelines for type 2 diabetes in children, nearly one-third of the children evaluated were eligible for further type 2 diabetes screening.

Rates for overweight, risk for overweight, and the presence of Acanthosis Nigricans among children in this study exceeded national reported estimates, Scott says. "Students in high-risk ethnic groups had higher rates of this marker when compared to non-Hispanic white students." Rates of Acanthosis Nigricans increased as BMI increased, regardless of ethnicity, age or gender. In discussing the importance of these stats, Scott underscores how obesity clearly

walks arm-in-arm with diabetes down the road of bad health.

Sharon Barton, now Scott's colleague in the UK College of Nursing, has been working to improve the health and well-being of school-age kids and adolescents for 25 years. In recent years, she has focused her research on nutrition and infants, trying to understand how so many children become obese in the first place.

"We're seeing younger and younger children with type 2 diabetes," Barton says. "And from studies I've done of rural Kentucky, what I've seen our kids eat really disturbs me." Infants are getting all kinds of non-nutritious, fattening foods—pizza and fast foods, mashed potatoes and gravy, desserts, and cereal in the baby bottle. Babies under six months were drinking Mountain Dew and Kool-Aid. "And though I was studying rural mothers," Barton says, "I don't know that mothers in Lexington or Louisville or in New York City aren't doing exactly the same thing.

"If you're not being fed healthy foods when you're little, it's going to be very hard to choose healthy foods as you grow up." [For more on her research, check out "Mama's Little Baby Loves Pork & Beans": www.research.uky.edu/odyssey/fall00/mamasbaby.html.]

Scott's study on *Acanthosis Nigricans* was the focal point of her dissertation, and Barton was the chair of Scott's dissertation committee. So how does the mentor react to her former student's recent work?

"It's groundbreaking," Barton says. "It's the first time anyone has done such a study looking at so many children to determine how a simple, visible marker might be used to predict risk for type 2 diabetes in kids and adolescents. It's huge."

The Basic Science of Obesity

Eric Smart's research is focused on our body's housekeeper and frontline defender—macrophages. When these cells spot an unwanted intruder, they reach out with a pseudopod, ensnare it, and gobble it up. Macrophages are the Good Guys.

Well, not always, says Eric Smart, a UK professor of pediatrics and Barnstable-Brown Chair in Diabetes. "Basically, bad nutrition can do them in. When people eat a lot of bad things, macrophages do their best at damage control by disposing of some of these things, but if they eat too much they become bad things themselves.

Leslie Scott (left) and Sharon Barton in the College of Nursing are working to teach children and their parents the value of healthy eating habits to help reverse Kentucky's alarming childhood obesity statistics.



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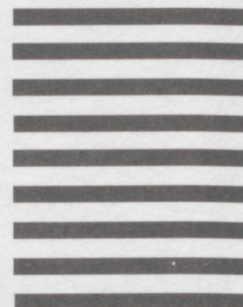
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Poor eating habits can change the function of macrophages," Smart explains, "and obesity plays a clear role in turning macrophages bad."

When someone is obese for a long time, he continues, macrophages begin to participate in an inflammatory process. Long-term activation of macrophages will kill the pancreas, cause plaques to form in the aorta, and increase the risk of heart attack and stroke.

"Infants are getting all kinds of non-nutritious, fattening foods—pizza and fast foods, mashed potatoes and gravy, desserts, and cereal in the baby bottle."

—Sharon Barton

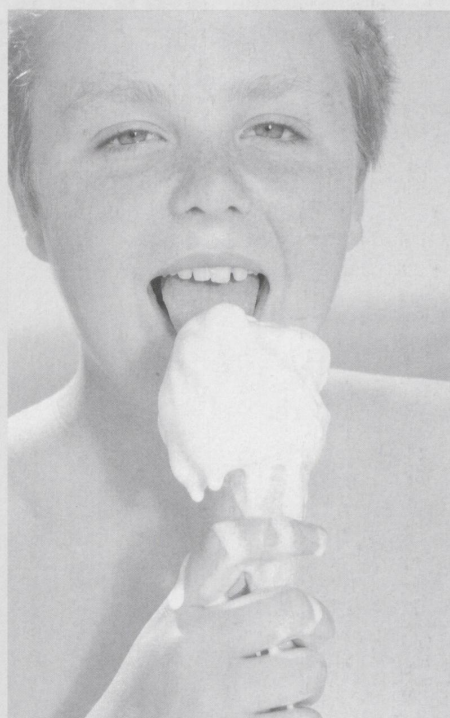
Smart knew that macrophages were an important piece of the obesity puzzle, and three years ago he began a study to find out exactly what roles these natural scavengers play.

In his lab at UK's Sanders-Brown Center on Aging, Smart and his staff began by isolating macrophages from normal-weight mice, which is easily done through a blood sample. Next, the researchers fattened up the mice and took another blood sample, again isolating the macrophages. Then the mice were put on strict diets and exercised so they would return to their original weight. A third blood sample was taken.

"What we've been interested in all along is proteins that change at these different stages," Smart explains, "not genes, but proteins. Lots of genes change, but that doesn't have any direct effect on function. If proteins change, that usually causes a direct functional effect."

Smart and his group are looking specifically at a special piece of the macrophage membrane, called a lipid raft, which functions like an air traffic control tower. This raft moves within the membrane—it actually floats—which is how it got its name. Basically, Smart explains, a lipid raft controls signals from outside and inside the membrane, and directs them to where they should go.

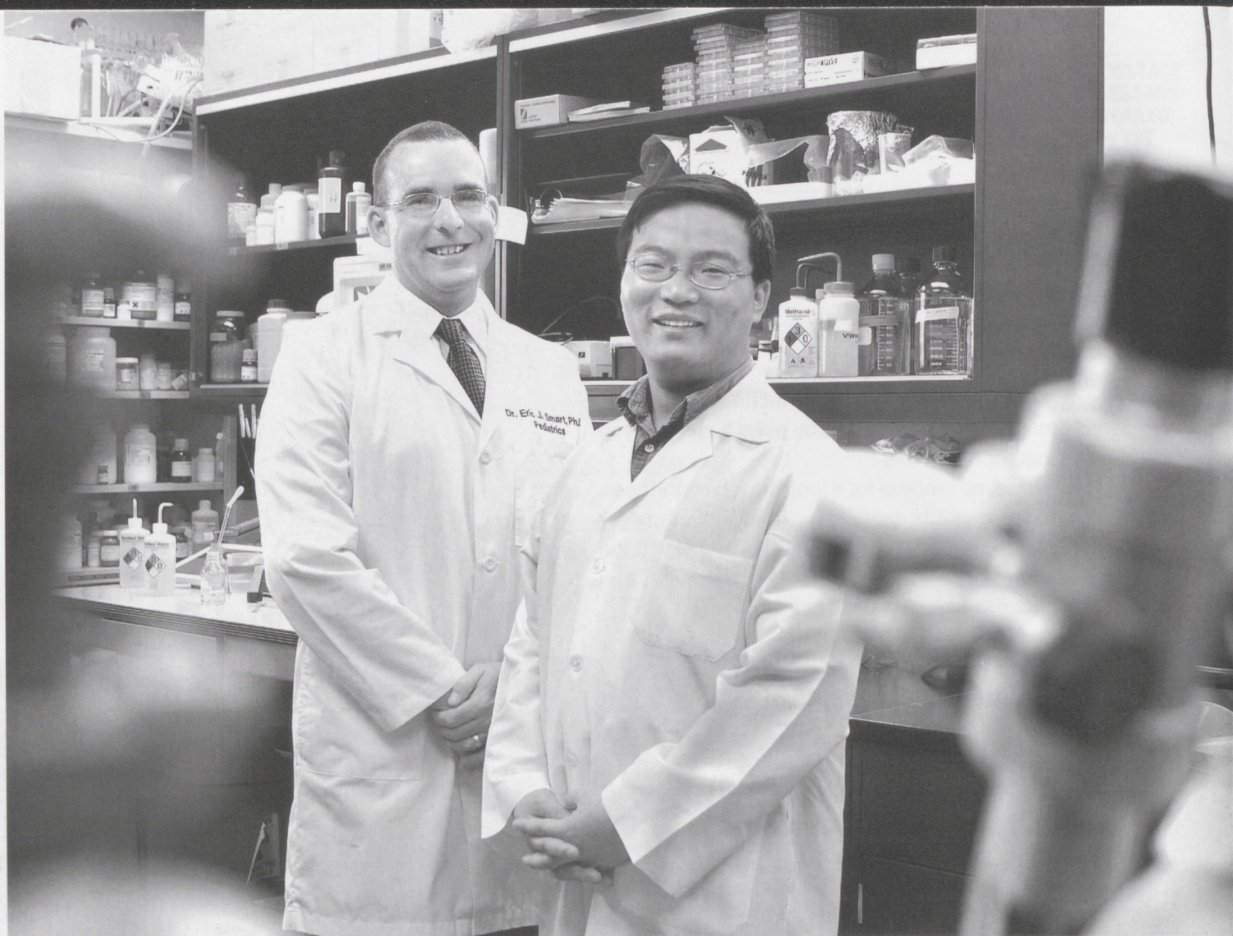
continued on p. 16



Couch Potatoes in Training

- Kids spend more time sitting in front of electronic screens than any other activity besides sleeping.
- Kids watch nearly 3 hours of television every day.
- The average time spent with various media (televisions, computers, video games) is nearly 4 1/2 hours per day among 2 to 17 year olds.
- The incidence of obesity is highest among children who watch four or more hours of television a day and lowest among children who watch an hour or less a day.
- 1 of 3 children ages 2 to 7 have a TV in their room.
- \$15 billion a year is spent marketing to kids, and half of all ads during children's TV shows are for food.

Sources: The Annenberg Public Policy Center; SUNY at Buffalo; Johns Hopkins University; the National Cancer Institute; the Centers for Disease Control and Prevention; the Center for Science in the Public Interest; and the *Lexington Herald-Leader*.



"We already know that fat and cholesterol directly affect the lipid rafts," says Smart, "and that diet will change them. What we're doing now is looking more intensely at the functions of these rafts."

The researchers are isolating these pieces of membrane to do a protein search. "Lipid rafts in normal animals contain around 250 proteins," says Smart. "What we're looking for is protein change after the mice are obese. What proteins are present now that weren't before? What proteins disappeared?" Proteins unique to the raft when the animal is obese could possibly be harmful, which is why they are the focus of interest. The flip side of the question is also important: What proteins have disappeared? These may have been contributing to good health, so it's important to identify them if, now, they are missing in action.

Then there's the third stage of weight control, when the mice are returned to normal. "It's interesting that when the animals are brought back to their original weight, the protein complex is not the same as it was initially. The difference in the proteins that show up in this stage is something very important to look at because it has important clinical implications," Smart says. "We know, for example, that there's a residual effect when obese people go back to normal weight; they don't really get back to baseline 'normal.' They still tend to have some health

problems related to their previous obesity."

If Smart and his staff discover that certain proteins don't "come back" in the post-obesity phase in humans, these proteins could be targeted and replaced with a drug or a treatment. And Smart's lab is already out in front of this.

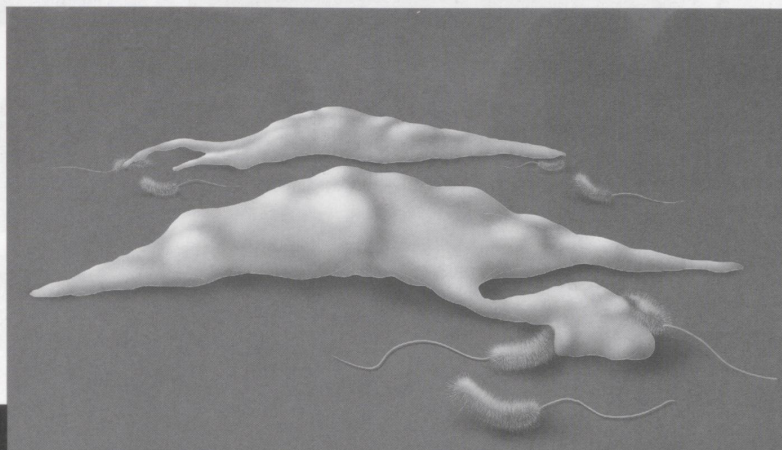
"Part of my team is working to understand the why and how of these protein changes. The other part of my lab is looking at different drugs that are known to affect particular proteins."

Smart says that he couldn't even attempt a project like this without the postdocs and grad students who work long hours in the lab. In addition to this team effort, there's another "essential player" in the mix.

"Our lab does all the biology—it's very intensive work, collecting the macrophages and going through the analysis. Then our partner, Dr. Haining Zhu in molecular and cellular biochemistry, does the chemical analysis." Zhu is an expert in proteomics—the identification, characterization and quantification of all proteins involved in a particular pathway, cell or tissue. In his work with Smart, he characterizes the proteins found in the lipid rafts in each stage of mouse weight. "It's a great partnership," Smart says.

So what about clinical trials with humans? Is that part of Smart's game plan?

Eric Smart (left) in UK's Department of Pediatrics and Haining Zhu in the Department of Biochemistry are collaborating to identify "obesity proteins." The basic science of obesity is the first step, Smart says, on the road toward human clinical trials.

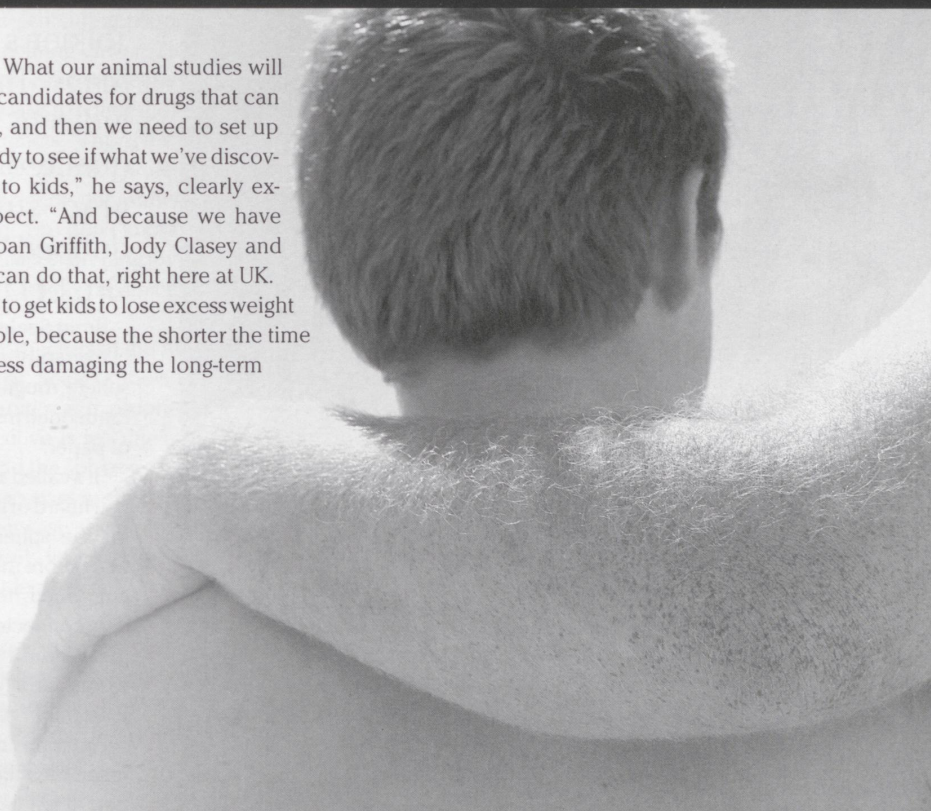


Tom Dolan, UK medical illustrator

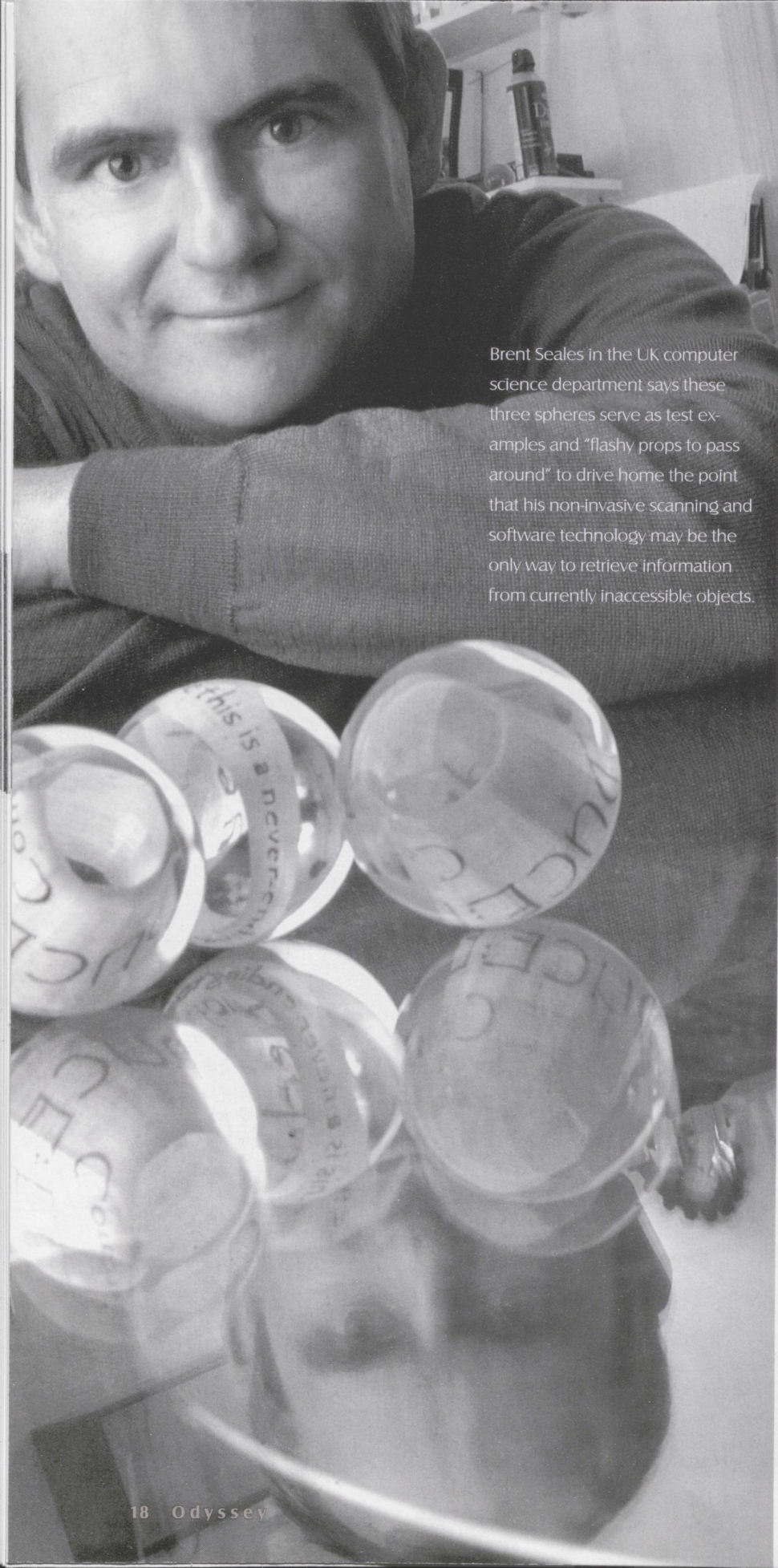
When macrophages, the body's frontline defenders, spot unwanted intruders such as these bacteria, the cells reach out with a pseudopod, ensnare the intruders and gobble them up.

"Yes, absolutely. What our animal studies will do is give us good candidates for drugs that can be used in therapy, and then we need to set up our own human study to see if what we've discovered is applicable to kids," he says, clearly excited by this prospect. "And because we have people here like Joan Griffith, Jody Clasey and Jim Anderson, we can do that, right here at UK."

"What's crucial is to get kids to lose excess weight as quickly as possible, because the shorter the time you're obese, the less damaging the long-term effects are." ■



Digital



Brent Seales in the UK computer science department says these three spheres serve as test examples and "flashy props to pass around" to drive home the point that his non-invasive scanning and software technology may be the only way to retrieve information from currently inaccessible objects.

"My precious," he hisses, doing his best impression of Gollum, the creature from Tolkien's *Lord of the Rings*. The phrase alludes to the mythical quality of an object his grad students have dubbed "The Glowing Orb of Life."

Brent Seales laughs as he cups in his hand the clear polyurethane sphere, roughly two inches across. Embedded inside is a curious strip of paper.

"It's called a Möbius band. Have you heard of it?" he asks as I reach for the sphere. Seales explains that before this strip of paper was entombed, he put a half twist in it, then connected the ends together. "You could trace around the whole strip without ever lifting your finger off the surface."

I spin this oddity to follow the inked message on the strip of paper: "It is a never-ending text and

Exploration: Unwrapping the Secrets of Damaged Manuscripts

WRITTEN BY
Alicia P. Gregory

by educing its secret you must now read it forever because it is a never-ending text...."

The project for which this sphere and three others were created is called EDUCE, which stands for Enhanced Digital Unwrapping for Conservation and Exploration. (Seales has a habit of naming his projects so that the acronym spells something clever. The etymology even makes sense: in Latin *educere* means "to bring out.")

And indeed, his goal is to educe the secrets of damaged manuscripts and artifacts. "This is my version of exploration," says Seales, an associate professor who's been in the UK computer science department since 1992. "It's like digging for gold. You don't know what you're going to find. This," he pauses, searching for the words to round out his analogy, "is actually prospecting for information that nobody's seen."

But unlike the prospectors of the American West with their picks and pans, Seales's tools of the trade are a specialized CT scanner and proprietary imaging software, and his objective is to "unearth" secrets for the world's scholars. And the spheres serve as test examples (and "flashy props to pass around") to drive home the point that such non-invasive scanning and software technology may be the only way to retrieve information from currently inaccessible objects.

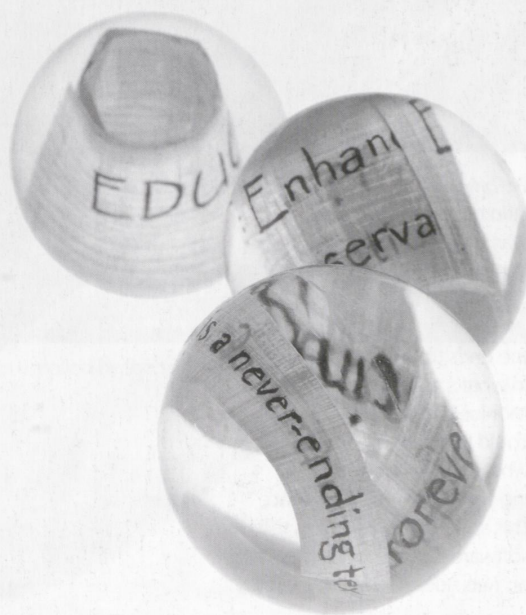
Seales and his team spent a year developing software that could digitally flatten a damaged manuscript, say one rumpled by hundreds of years of moisture, so in 2000 Seales went to the British Library in London to try his technique out on the real thing.

At the time he was the principal investigator of a three-

year, NSF-funded project called the Digital Atheneum. The project's goal was to develop new techniques for restoring, searching and editing humanities collections.

In the bowels of the British Library, the first object the conservator showed Seales was a manuscript that was so mangled, he says, "We almost ran screaming from the room, because there was nothing we could do. We had no tools that could help."

Seales tells me such manuscript fragments exist in the nooks and crannies of almost every archive. "Exactly how many? It's hard to tell," he says. "In the old days, these kinds of manuscripts were cracked open and pains-



takingly laid out on paper with tweezers and a magnifying glass. Libraries stopped doing that with all of these damaged objects because they didn't have the manpower to do it, and they weren't getting the results they wanted."

Seales becomes more animated as he tells me that the conflicted feelings conservators have about manuscripts—"You'd like to know if anything's there, but it just doesn't feel right to destroy it"—motivated him to create a non-invasive exploration tool.

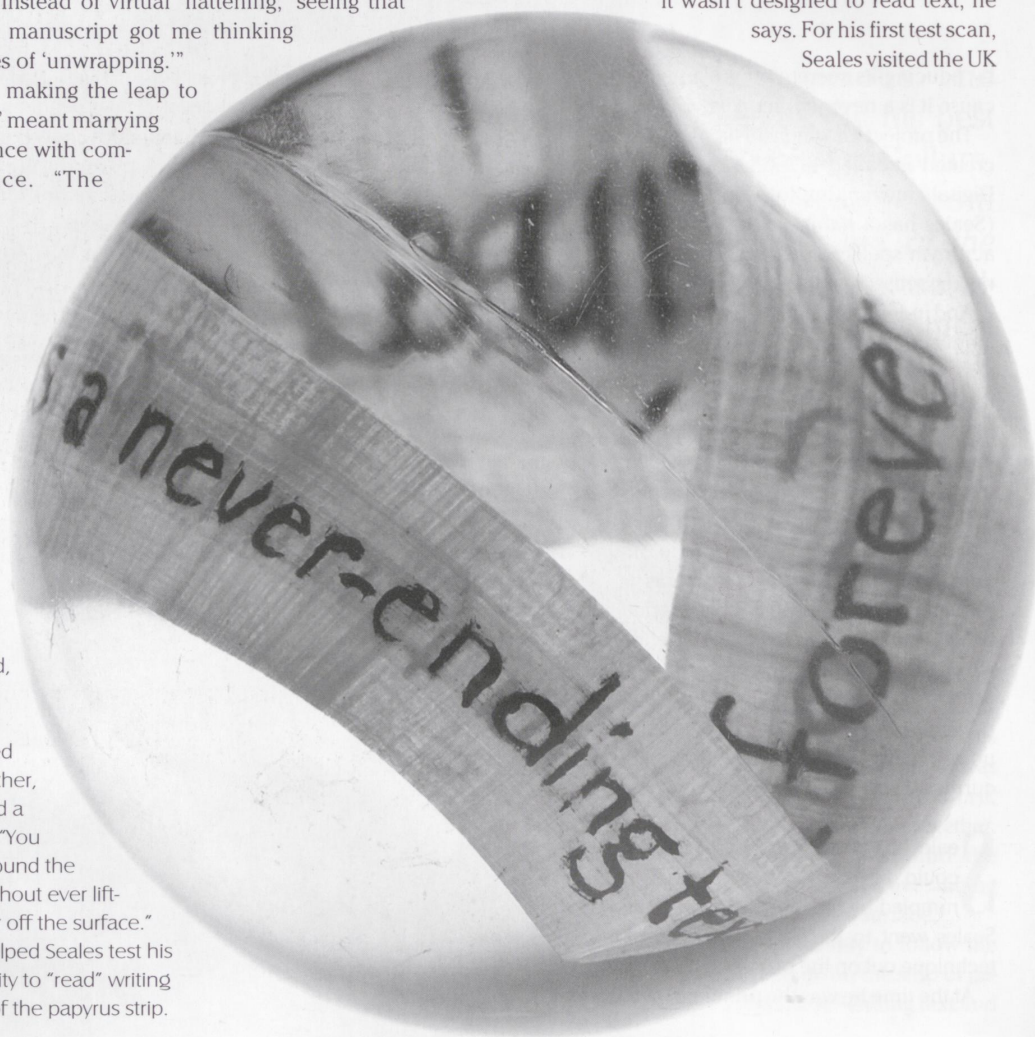
After their encounter with the mangled manuscript, Seales says, "Instead of virtual 'flattening,' seeing that beyond-hope manuscript got me thinking along the lines of 'unwrapping.'"

For Seales, making the leap to "unwrapping" meant marrying medical science with computer science. "The

whole idea is that you can't expose parts of the object that you need to see because they're buried. We've been using a CT—computed tomography—scanner, because we need penetrating technology," he explains. CT scanners, which doctors often use to detect tumors, simultaneously send out several X-ray beams from different angles to capture a "slice." "Then the whole apparatus shifts by a microscopic amount and you take another slice," Seales explains. His software puts these slices together ultimately to form a cross-sectional, 3-D picture.

But your run-of-the-mill CT scanner isn't ideal because it wasn't designed to read text, he says. For his first test scan, Seales visited the UK

Before this strip of paper was entombed, Seales put a half twist in it, then connected the ends together, in what's called a Möbius band. "You could trace around the whole strip without ever lifting your finger off the surface." This sphere helped Seales test his software's ability to "read" writing on two sides of the papyrus strip.



hospital. He wrote the words "UK 2003" on a piece of paper, rolled it up and put it in the scanner. "The CT operator thought I was nuts," he says, laughing. "They're used to looking for fissures or bubbles, not writing."

He says if you think about reading text (seeing something that's only as thick as a piece of paper), you need really good resolution. Medical imaging doesn't require that kind of resolution, but Seales discovered that scanners built for manufacturing analysis were just the ticket.

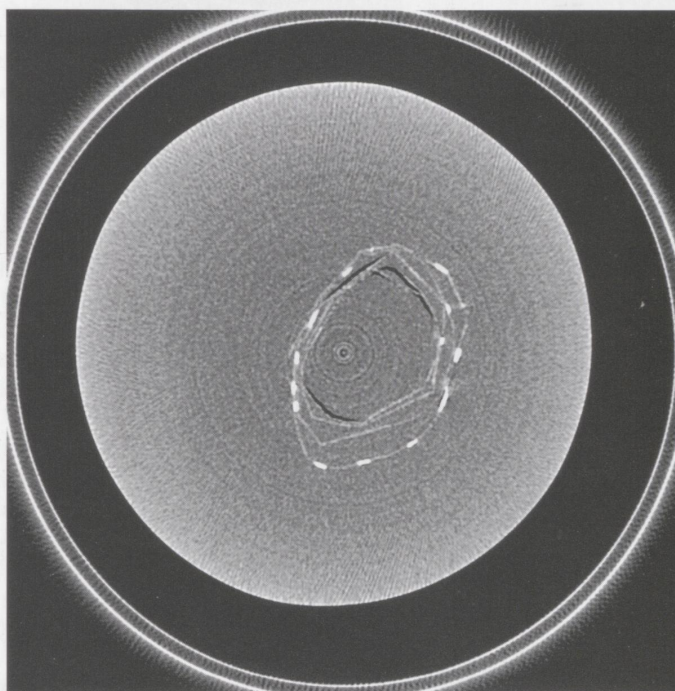
And he found a partner in physicist Joseph Gray at Iowa State University's Center for Nondestructive Evaluation. Gray's custom-built scanner, Seales tells me, is driven by a cluster of computers because it takes so much computational muscle to do the scan. The scanner was created for the express purpose of using non-destructive means to check manufacturing processes, for instance, to determine the integrity of a hypodermic needle.

"The beauty of this scanner is its resolution capabilities," Seales says. "Medical scanners have a fixed 'ring size.' The resolution of each slice is determined by how many pixels are spread out over the size of that ring. If the ring is big enough to fit your entire body into and the resolution is, say, 512 by 512 pixels, if you put just your little finger in there, the scan would get about 10 pixels on your finger's cross section, and the rest of the pixels would sample the air around your finger. With Joe's scanner, we can move that ring down to a very small size so that the 512 by 512 pixels are 'focused' exactly on your finger and we could get 500 slices between the first and second joints.

"We needed a scanner that can be adjusted to 'artifact-size,' not fixed at 'human-torso-size.'"

EDUCE: Enhanced Digital Unwrapping for Conservation and Exploration

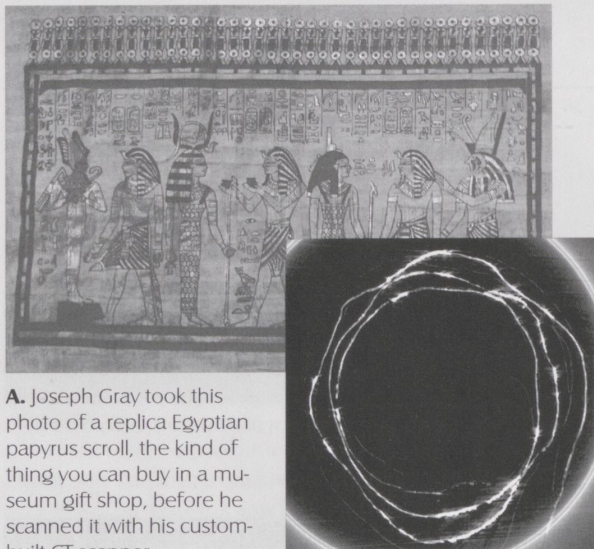
A. A photo of the text Brent Seales wrote on a papyrus strip before it was embedded inside a polyurethane sphere



B. In this CT slice, the white "flare-ups" indicate where ink is on the papyrus strip.

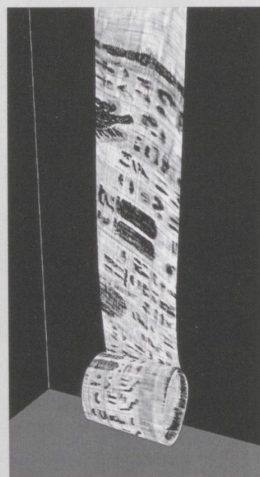
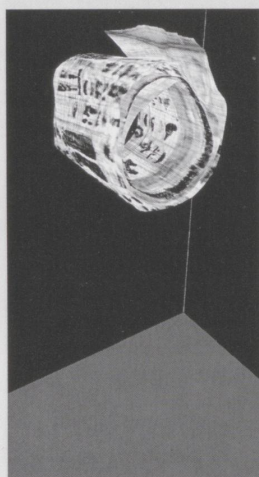
EDUCE: Enhanced Digital Unwrapping for Conservation and Exploration

C. The virtual strip unrolled by the software



A. Joseph Gray took this photo of a replica Egyptian papyrus scroll, the kind of thing you can buy in a museum gift shop, before he scanned it with his custom-built CT scanner.

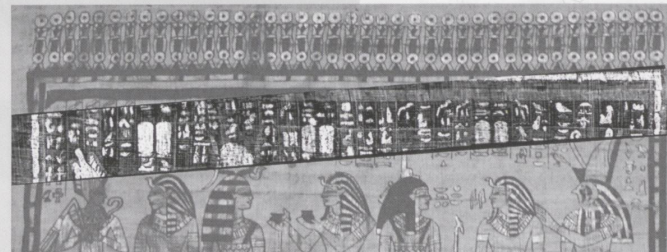
B. This CT slice from Gray's scanner shows the flare-up of ink (the white regions).



C and D. After Brent Seales's software puts the CT slices together, it "unrolls" the virtual scroll.



E. A close-up of the virtual scroll after passing through the software shows the detail captured by the CT scanner.



F. The virtual scroll strip is inset over the photo of the original scroll.

The biggest challenge to capturing all of this information is dealing with file size. "At 50 micron resolution, we take 1,000 slices. Our data sets are easily 2 to 3 gigabytes. You can't just load that up on a PC."

But what happens after you get all of this data? Seales says his software (based on very complex algorithms) puts all of the slices together, then allows you to grab the top edge with the mouse and apply "gravity" to unroll the object and "push" it against a virtual wall to flatten it out.

For the first test of Gray's scanner, Seales purchased a sheet of papyrus at an art store, along with several colors of ink. He cut the sheet into a strip, drew circles, squares, triangles, and numbers on it, then rolled it up and had Gray scan it. "We could get all of the fibers of the papyrus to come out great, but at that first power setting we couldn't see the ink. At a different setting, the ink came out great, but the papyrus was just a white blob with no detail. We realized it would take a little trial and error to find the right setting for each object."

For their second test, Gray used something he found lying around his house—a replica Egyptian papyrus scroll, the kind of thing you can buy in a museum gift shop. He rolled it up and scanned it. [See photos on this page.] "It was exciting to see the birds materialize as the

software slowly unrolled the scroll," Seales says. "But I never even saw the actual scroll. So I decided the next object we scanned need-

ed to be something I could pass around, to show 'before' and 'after.'"

So why did Seales commission a sculptor to create the "Glowing Orbs of Life"? He needed scientific objectivity.

"When I did our first sample, with the circles and numbers, I carefully rolled up the strip and made sure the layers weren't touching to ensure the software could distinguish one layer from another. And that's fine for the first time, but after that I realized I can't do this because I'm going to engineer it so it works," he says. "I wanted to give control over to someone else, so I couldn't contrive the way it would turn out. And that's more like it's going to be when we eventually work with real objects. It's going to be very random."

Tim Vettters, a sculptor who works for a foundry just outside Lexington, twisted and rolled strips of papyrus in a variety of ways (wrapping some as many as five times). He suspended the papyrus, poured liquid polyurethane into a spherical mold, let it harden, and took the spheres to UK. "We got the first sphere back from Tim; we sent it to Joe, who scanned it and sent the data back to us. We spent a month tweaking our algorithms to make it unroll correctly," Seales says.

Building that randomness into his tests was Seales's first reason to create the spheres. The second was that "a tangible example is a powerful thing. It's a flashy prop I can pass around," says Seales, noting that's invaluable in his sales pitch. "This project will go nowhere if I can't get the partnerships I need from the scholars who have access to real objects. I've moved into high gear to make that pitch."

He's presented his software and spheres to a variety of groups: the Joint Conference on Digital Libraries (put on by the Institute of Electrical and Electronics Engineers and the Association for Computing Machinery), and annual meetings of the American Library Association and the Society of American Archivists.

People who go to technical conferences tend to be jaded, Seales says. They've seen it all. "It's hard to impress them, and even if you do, they rarely show it." But when he showed his digital demo of a papyrus scroll unrolling at the Society of American Archivists conference in Beverly Hills in fall 2003, the crowd gave him the most positive reaction imaginable. "With the knowledge of

what they have in their collections, when these archivists saw me, before their eyes, unroll this scroll there was literally an 'AHHHHH!'" A warm-and-fuzzy feeling wasn't all Seales got from that experience. He also earned a nickname from his colleagues: "Now they call me 'Audible Gasp.'"

Seales says he's trying to pick up some high-profile partners in addition to his senior collaborators on EDUCE: Kevin Donohue (UK electrical and computer engineering), Jim Griffioen and Ken Calvert (UK computer science), Joseph Gray, Paul Mostert (professor emeritus, University of Kansas), Duncan Clarke (Fremont Associates, South Carolina), David Jacobs (British Library), and Chris Collins (Natural History Museum, London).

The EDUCE team, with Seales as principle investigator, is currently working on a proposal to the National Science Foundation that would take this work to the next level, paying for travel and staff time to scan and digitally unroll real-life objects.

"We actually envision building a software tool to allow curators, conservators and scholars to do the analysis on their own, because they know what they're looking for and if what they see means something. Our role would be maintaining all the technology underneath." ■



Growing New Business in the Bluegrass

John Parks took over the reins as executive director of UK's Coldstream Research Campus on April 1, 2004. Two months later, UK announced the purchase of the Lexel Corporation's property at Coldstream. Parks comes to UK with extensive experience directing university research parks, having launched the University of Illinois Research Park in 2000 after heading up the Iowa State University Research Park Corp. and the Iowa State Innovation System.

Q: John, you really hit the ground running with the purchase of the Lexel building, now renamed the Coldstream Center. Tell us what that means for Coldstream.

A: It means a lot of things actually. Lexel Imaging Systems has been at Coldstream for over 10 years. They use a technology in the manufacture of cathode ray tubes that will be displaced over the next several years and so are in the process of reinventing themselves. In April they had just a year remaining on their lease, and since they needed only half the space in the 163,000 square-foot building, were looking to relocate. The owners of the building were interested in selling. So we bought the building and renegotiated their lease, saving 105 high-tech jobs. The purchase also signaled a new period of collaboration with UK researchers, and we gained valuable lab space, including a "clean room" and infrastructure that will be attractive to various companies and a couple of our research centers on campus.

Q: What enticed you to come to Coldstream?

A: I knew a little bit about Coldstream from my associates in AURP, the Association of University Research Parks. But no one prepared me for the beauty of the setting and the beauty of the Bluegrass. At 735 acres, Coldstream is larger than the average park and the 220 acres for recreation is an amenity most would love to add to their parks. And there's quite a bit of infrastructure—a substantial road system and complete utilities—and significant tenants.

Q: What about Coldstream's relationship to UK?

A: UK's commitment to build a new \$12 million Center for Pharmaceutical Science & Technology (CPST) at Coldstream is another reason I was attracted to Coldstream. It is a statement by UK that they're going to be active in this research park. One thing this means is that more researchers are on-site, in close proximity to the companies that are also there. Many faculty are actively engaged with the companies, and this is really what a research park is about.

Q: What is the connection between research and economic development?

A: A university's research base is critical to economic development. At UK, the Executive Vice President for Research Wendy Baldwin has been very active in developing relationships with industry. The IP and tech-transfer issues are important. Start-up funding is important. Sponsored research is important. Government-funded projects matched with private funding are very important. All of this, including Coldstream, falls under the umbrella of research at UK.

Q: How important will UK's CPST be to Coldstream?

A: The CPST has a very strong potential to attract small and medium-sized pharma-companies, perhaps even device manufacturers. When you have a partner like the CPST, looking for interactions with corporate partners, it gives us tremendous marketing opportunities to attract new business. The CPST will be a strong magnet for Coldstream.

Q: Explain what you mean when you say Coldstream is ready to achieve critical mass around certain types of technologies.

A: Our first focal area—pharmaceuticals and biomedical engineering—will be centered around the CPST research in medicine and pharmacy. A second area is Ag related: we'll be looking for biotech-based companies that could partner with our research in natural products and plant-made pharmaceuticals. The equine industry also has a significant presence at Coldstream that we can build on, not to mention the research at UK's Gluck Equine Center. A third theme will center around manufacturing systems and processes, and UK's College of Engineering.

Q: How will you use Coldstream's location in your marketing efforts?

A: We want to capitalize on the whole cultural aspect of a great environment to work in, live in and play in. If you draw a circle around Coldstream, you see a lot of amenities in this area that are very significant such as new housing developments, golf courses, the Marriott resort and Embassy Suites, the Kentucky Horse Park, Spindletop, the Center for Applied Energy Research, and Toyota and Lexmark. There's a lot going on here, and Coldstream will be part of state and local economic development efforts.

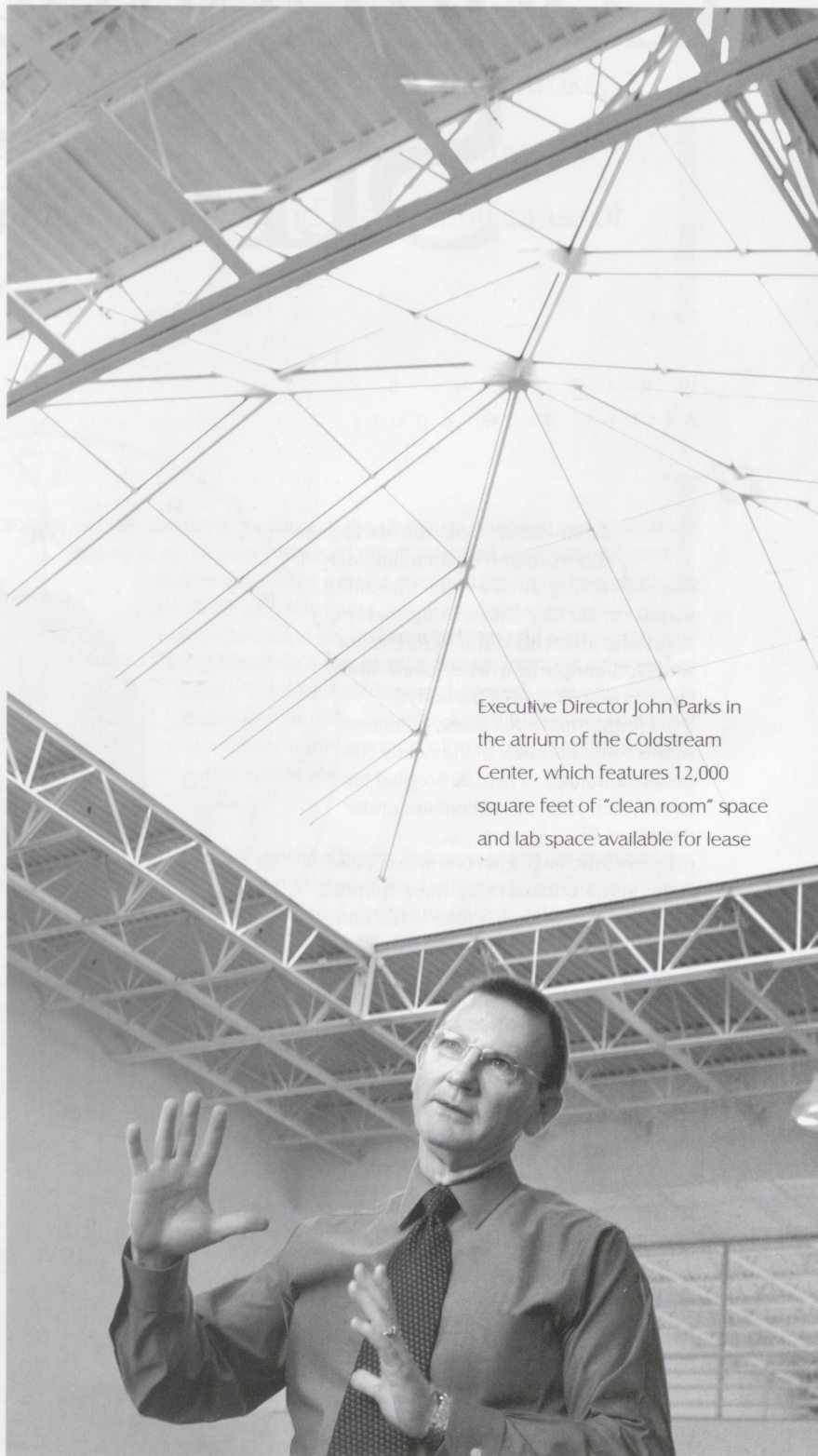
Written By Deb Weis

Q: *What do you say to people who expect instant results at Coldstream?*

A: We need to get the message across that it's not going to happen overnight. We can make excellent progress in the near term (the next three to five years), but we've got to keep our focus and realize we'll measure progress and success against where we want to be in 10 years—and in 20 years. We'll measure success not just by the number of jobs but also by the kind of jobs that are created here, the tax base that's generated, what that tax base returns to the community and the state, and what it does for employment options for people we graduate from this institution. We have the potential to add great value to what's already strong in Kentucky. ■

About Coldstream Research Campus

Once a prominent Bluegrass horse farm, today's Coldstream provides a synergetic research campus environment for science and technology-focused businesses, and UK faculty, staff and students. A current complex of six buildings, called the Kentucky Technology Center (KTC), houses 14 technology-based companies. Other tenants include IBM Global Services, Lexel Imaging Systems, RAAM Global Energy Company, and the Embassy Suites Hotel. Over 600 people are employed at Coldstream. UK's new \$12 million Center for Pharmaceutical Science and Technology building is scheduled to open there in March 2006. For more information, see UKColdstream.com.



Executive Director John Parks in the atrium of the Coldstream Center, which features 12,000 square feet of "clean room" space and lab space available for lease

Confronting Stroke

WRITTEN BY
Alicia P. Gregory

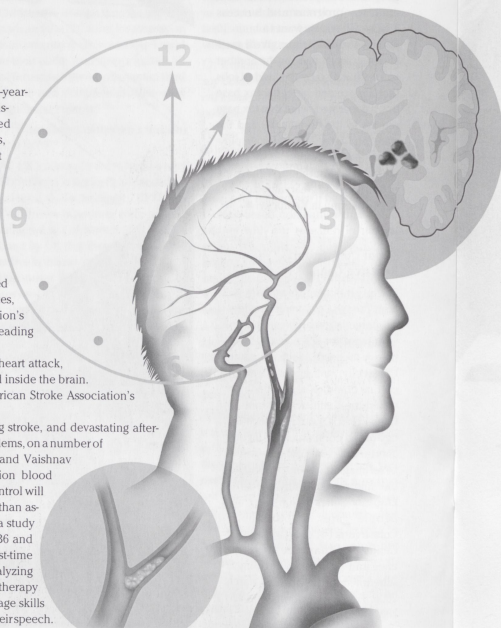
"Last weekend I took care of a 23-year-old woman with an acute, disabling stroke—the unwanted surprise of her life," Creed Pettigrew says, as he talks about his work. "Stroke is not simply Grandpa in a wheelchair who can't move one side of his body."

To further make his point, Pettigrew shares some statistics: of the nearly 600 people admitted to the UK hospital for stroke each year, 25 percent are under the age of 55.

Every 45 seconds, someone in the United States has a stroke; every three minutes, someone dies of one. Stroke is the nation's third-leading cause of death and the leading cause of long-term disability.

Stroke is a "brain attack"—it's like a heart attack, only it affects the arteries leading to and inside the brain. And every second counts. As the American Stroke Association's motto puts it: "Time lost is brain lost."

The University of Kentucky is battling stroke, and devastating after-effects like dementia and language problems, on a number of fronts. Pettigrew and his colleague Anand Vaishnav are finding out if aspirin, a prescription blood thinner, and rigorous blood pressure control will prevent future strokes more effectively than aspirin alone. Pettigrew just wrapped up a study on the role of folic acid and vitamins B6 and B12 in preventing second strokes and first-time heart attacks. And Lee Blonder is analyzing videotapes to see if targeted language therapy can help stroke patients improve language skills or re-energize the emotional content of their speech.



Tom Dulan, UK medical illustrator

Every 45 seconds, someone in the United States has a stroke; every three minutes, someone dies of one. Stroke is the nation's third-leading cause of death and the leading cause of long-term disability.

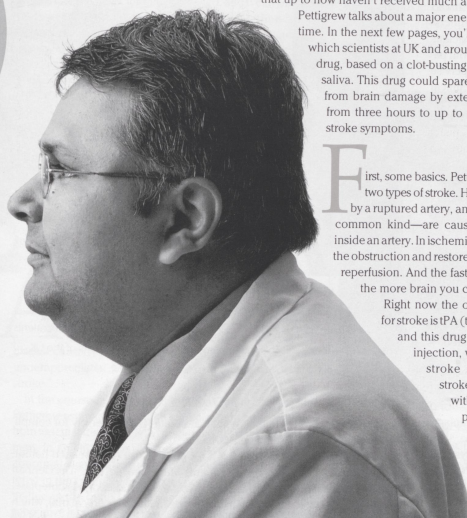
These projects all have one thing in common: they focus on disabling results of stroke that up to now haven't received much attention in clinical research.

Pettigrew talks about a major enemy in the battle against stroke: time. In the next few pages, you'll read about a clinical trial in which scientists at UK and around the world are testing a new drug, based on a clot-busting protein found in vampire bat saliva. This drug could spare thousands of stroke patients from brain damage by extending the treatment window from three hours to up to nine hours after the onset of stroke symptoms.

First, some basics. Pettigrew points out that there are two types of stroke. Hemorrhagic strokes are caused by a ruptured artery, and ischemic strokes—the most common kind—are caused by blood-clot barricades inside an artery. In ischemic strokes, the goal is to remove the obstruction and restore blood flow, something called reperfusion. And the faster you reperfuse brain tissue, the more brain you can save.

Right now the only FDA-approved treatment for stroke is tPA (tissue plasminogen activator), and this drug must be administered, by IV injection, within three hours of onset of stroke symptoms. Because many stroke victims don't seek treatment within that limited window of opportunity, Pettigrew says, "It's estimated that in the U.S. no more than 2 percent of all eligible stroke patients get tPA."

"Stroke is very much like a heart attack in that, first



of all, it's a matter of irrigation. The brain is exquisitely sensitive. It needs a continuous, fresh supply of blood with oxygen and sugars, and without those nutrients the tissue cannot survive. The first line of treatment is reperfusion.

"If we're lucky enough to beat the clock—which is what happened with this 23 year old I saw last weekend—tPA works pretty well," says Pettigrew, director of the UK Stroke Program, who, as a member of the 24-hour Stroke Response Team, sees firsthand stroke's devastating after-effects. Pettigrew and two other physicians take phone calls to consult about patients, admit patients and supervise their care. This is one of the clinical outreach efforts of the UK Stroke Program, part of the Sanders-Brown Center on Aging.

Because of tPA's time crunch and other serious drawbacks, researchers around the world are looking at new, more targeted "clotbusters." One of these is called Desmoteplase. This synthetic protein was derived from a natural compound in vampire bat saliva that keeps the blood from clotting while the bat is feeding. Here's a fun fact: A bat's "meal" can take up to 30 minutes. The blood of the bat's sleeping prey begins to clot just a few seconds after the skin is punctured. A string-like substance called fibrin forms a "screen" that slows, and eventually stops, blood flow. This special compound in bat saliva digests fibrin.

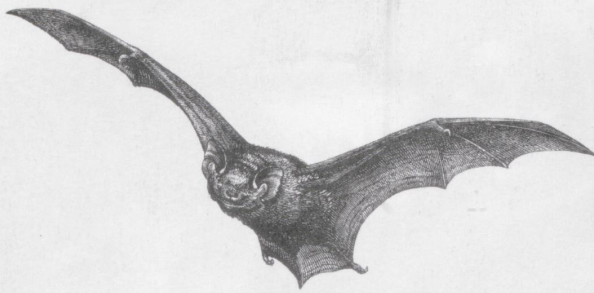
Pettigrew lists several advantages of Desmoteplase over tPA: "Desmoteplase lowers the risk of systemic hemorrhage. When you inject a drug that purposely busts the 'trouble' clot, you get an undesired, but unavoidable, side effect: you impair the body's



In addition to leading a number of stroke-prevention research projects, Anand Vaishnav (left) and Creed Pettigrew are members of the 24-hour Stroke Response Team. They take phone calls to consult about patients, admit patients and supervise their care. This is one of the clinical outreach efforts of the UK Stroke Program, part of the Sanders-Brown Center on Aging.

ability to form normal clotting. What that creates is a propensity for complications like gastro-intestinal hemorrhages."

He pulls out some stats: "tPA has a 6.4 percent risk of associated hemorrhage, compared to 0.8 percent in patients who do not get tPA." The German drug company PAION GmbH launched two parallel studies of Desmoteplase. The U.S. study is still ongoing, but the European Phase II clinical trial, which wrapped up in February 2004, found the risk of hemorrhage with Desmoteplase



was 3.3 percent. The European study also determined an effective dose of Desmoteplase and showed that the drug could safely restore blood flow to damaged brain tissue six to nine hours after onset of stroke symptoms.

"The trouble with any of these clot-busting agents is that there is a constant balance between the risk of hemorrhagic complications and likelihood of advantageous reperfusion of the brain.

"Desmoteplase binds avidly to the fibrin in the clot, which means it's better targeted." Pettigrew explains targeting is important because you can give much smaller doses of this protein than tPA, thereby lowering the risk of hemorrhage.

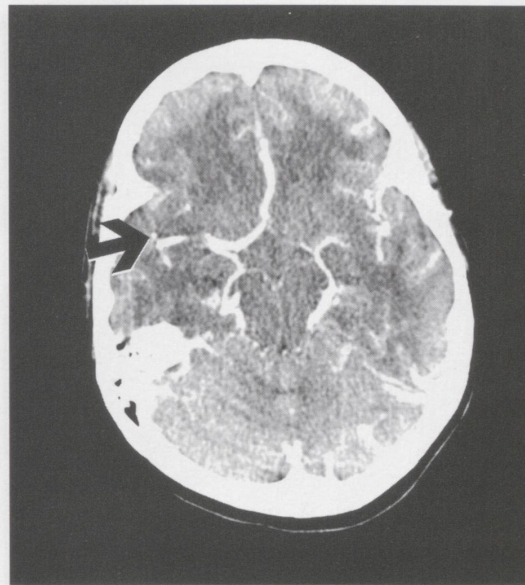
"Desmoteplase doesn't deplete the body's pool of clotting factors like tPA does, it's better targeted, and it can be given in lower doses for delayed periods of time." And Desmoteplase works in two minutes—"that translates into thousands of brain cells salvaged per minute," Pettigrew says. It can take up to an hour for tPA to have an effect.

UK was one of only 12 sites in the U.S. Desmoteplase study, and Pettigrew led UK's recruitment effort. Only one patient at UK was enrolled in the study, although Pettigrew's research team screened more than 50 stroke patients. (To qualify the patient could not have already been treated with tPA, had to arrive at UK within nine hours of stroke-symptom onset, and could not have had recent surgery.) "These exclusionary criteria were set up to limit the risk of hemorrhage," Pettigrew says.

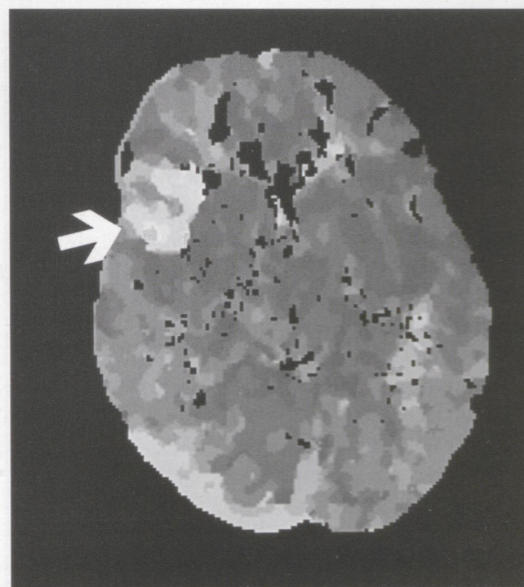
"We were pleased to be a part of this and look forward to seeing the results of the U.S. study."

Alzheimer's disease is the most common cause of the mind-robbing malady dementia, but, as Pettigrew points out, most people don't realize vascular disease caused by stroke is the second: "Dementia is a silent, underappreciated, but catastrophic, secondary outcome of stroke."

In the course of his clinical rotations in the UK hospital, Pettigrew estimates every fifth stroke patient he sees suffers from vascular disease-related dementia. "It's crushingly common. In an MRI, these patients will have multiple areas of abnormal signal intensity—"bright" lesions—that are clustered in the complex network of nerve fibers called 'white matter' in the brain," he explains, noting an MRI is only a supportive laboratory test to a clinical diagnosis of dementia.



A. This CT brain scan was obtained five hours after onset of left-sided paralysis in a 23-year-old woman treated with an intravenous infusion of tissue plasminogen activator (tPA). The arrow shows an artery on the right side of the brain that has been re-opened by the "clot-busting" action of tPA.



B. This brain blood flow scan taken of the same patient at the same time as the CT scan (A) shows a small area of brain that still has impaired blood flow after infusion of tPA (arrow). Without tPA, almost all of the right side of the brain would have been damaged beyond recovery.



That final diagnosis requires a formal neurological assessment, something Pettigrew explains is built into an exciting new study called SPS3 (Secondary Prevention of Small Subcortical Strokes).

This five-year study, led by Anand Vaishnav, is looking at a common, preventable type of stroke called lacunar stroke. "Lacunar" comes from the Latin word meaning "hole." These tiny, round lesions are less than 1.5 centimeters across and usually occur deep within the brain. Forty percent of the patients admitted to the UK Hospital with ischemic strokes have lacunar strokes.

"And the main risk factor for this type of stroke—in 70 to 80 percent of cases—is hypertension," says Vaishnav, an assistant professor of neurology who's worked with Pettigrew in the UK Stroke Program for two years. SPS3 is looking at two key questions: Is aspirin plus Plavix (an FDA-approved blood thinner) better than aspirin alone at preventing recurrent lacunar stroke? What should the target blood pressure range be to reduce the chance patients with lacunar stroke will have a second stroke and lose their memory?

"We know that modifying blood pressure is definitely going to decrease the stroke risk, but to what extent should we go to decrease the blood pressure?" Vaishnav says. "The second aim of the study is to determine whether we should be very aggressive in treating blood pressure, keeping systolic less than 130, or less aggressive, keeping it between 130 and 149."

The University of Texas Health Science Center in San Antonio received National Institute of Neurological Disorders and Stroke (NINDS) funds for this study and recruited Vaishnav as principal investigator, and Pettigrew as co-investigator. Pettigrew says, "They asked us to participate based on the numbers of patients we've enrolled in other trials." Since 1990, the UK Stroke Program has participated in more than 30 clinical trials. "We've marketed ourselves aggressively, and we've had great success in attracting clinical trial participants."

"We've been enrolling patients in the study for the past six months, and we expect to enroll more in the next three years. The last patient will be followed for at least a year and a half," Vaishnav explains.

"One of the important features of SPS3 is that it was designed to see what therapeutic interventions can do to prevent dementia from occurring," Pettigrew says, adding that the study involves a psychologist who will conduct a battery of standardized psychological tests to look at language usage and intelligence, and who will be mapping changes in those areas over time. "SPS3 is going to be unusually comprehensive. Unlike most studies, this is not simply a matter of 'did you prevent another stroke or not?' We're asking, 'Does the therapy keep Mr. Jones from becoming demented?'"

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UNIVERSITY OF KENTUCKY

Lee Blonder (right), a faculty member in the UK Stroke Program and professor in the Department of Behavioral Science with joint appointments in neurology and anthropology, leads a team that is analyzing videotapes to see if targeted therapy works for stroke patients with language disorders. Jane Meara (left) transcribes and edits each videotape down to 60, 10-second clips, and Teri Cox watches each clip and rates facial expressivity.

Once Mr. Jones has had a stroke, there's a significant increased risk he'll have another. But as time passes after the first event, his threat of a future stroke goes down. Lowering blood pressure and cholesterol are the primary risk-factor targets for doctors in stroke prevention. But based on a study UK participated in called VISP (Vitamin Intervention for Stroke Prevention), physicians may soon add high homocysteine levels to their stroke-risk checklist.

The goal of the VISP study, funded by NINDS and led by Wake Forest University, was to find out if a special vitamin cocktail can prevent second strokes and first-time heart attacks. The study compared high- and low-dose vitamin combinations (folic acid, B6 and B12).

Why these vitamins? They metabolize homocysteine, an amino acid produced by the body when it processes protein-rich foods like meat. Elevated homocysteine levels in the blood, caused by genetics or diet, are associated with narrowing and hardening of the arteries, as well as increased risk of heart attack, stroke, and possibly Alzheimer's disease. But this association was merely observational—no clinical study had looked at the link between high homocysteine levels and heart attack and stroke risk.

VISP followed 3,680 patients (the average age was 66) in 45 centers in the United States, 10 in Canada, and one in Scotland. The UK Stroke Program was the highest enrolling U.S. center, with 124 patients. "We committed an immense amount of time and effort to participate in this study," says Pettigrew, who was a co-author on the resulting article in the *Journal of the American Medical Association* in February 2004.

But the study didn't yield what researchers expected. The high-dose vitamins did do a better job of lowering homocysteine levels, but about 8 percent of the patients in both the high-dose and low-dose groups had another stroke during the two years that they were studied. "Despite the fact that these vitamins and the dosages were chosen by a panel of world authorities, and despite the fact that the vitamins had an immediate and sustainable effect on homocysteine, it wasn't sufficient to alter the likelihood of recurrent stroke and heart disease.

"It's still being debated whether homocysteine is a causative risk factor or whether it's a marker, a secondary risk factor," Pettigrew explains. "But the VISP study established that there is a strong relationship between the level of

homocysteine and the likelihood of vascular disease. I can envision the time when the American Heart Association posters will read: 'Do you know your cholesterol and homocysteine levels?'"

It's the look in your eyes, the inflection in your voice, the words you choose, and how you string them together that expresses your ideas. And for Lee Blonder expression is everything. Her day-to-day work involves evaluating conversations of stroke patients, with the goal of improving their ability to relate to other people.

"If you boil it all down, I'm interested in how deficits caused by damage in the brain affect natural communication," she says, pointing out that her approach is a little different from other scientists'. "I come from a different background than the speech pathologists and neuropsychologists. I'm an anthropologist.

"Anthropology has always emphasized community and the cultural context within which people interact. And anthropological linguistics is interested in looking at language use in context, not just language structure," says Blonder, a behavioral sciences professor, who joined the UK Stroke Program in 1989.

Blonder pauses to quickly describe two types of stroke-related language disorders. First, there's aphasia, caused by damage to the language center in the brain's left hemisphere. Aphasia is a total or partial loss of the ability to use words. People with this disorder can have a range of problems, from trouble finding the right words to being unable to speak.

Then there's aprosodia, the absence of normal variations of pitch, rhythm and stress in speech. "These are right-hemisphere stroke patients who have this sort of 'flat affect'—little facial expression and very restricted intonation. They also have problems perceiving facial expression and intonation in others," she says.

Five years ago the University of Florida sought Blonder's help. "They were putting together a clinical center with several different projects to treat people with communication disorders. But they wanted not just to measure improvement on a scale, they wanted to measure improvement in natural conversation, so they contacted me because they knew I'd done a lot of this kind of work."

Blonder became a subcontractor. Patients in this study

In the course of his clinical rotations in the UK hospital, Creed Pettigrew estimates every fifth stroke patient he sees suffers from vascular disease-related dementia. "It's crushingly common."

were screened for and ruled ineligible if they had dementia or psychiatric disorders and had to have had a unilateral stroke (affecting only one side of the brain). After patients at the treatment sites (University of Florida, Old Dominion University and Baylor College of Medicine) go through therapy to treat their verbal or nonverbal problems, videotaped conversations with each patient are shipped to UK. "There are between 90 and 100 patients in this study, and they've each been assessed three to four times, so that's a lot of videotape."

Blonder's team includes Jane Meara, a full-time research assistant who transcribes the videotapes, putting in codes that allow software programs to "read" them "and count the number of emotion words, count words per turn, that sort of thing," Blonder explains. "Then Jane edits the tapes down to 60, 10-second clips and turns them over to our raters."

The raters, two student research assistants, watch each clip and rate facial expressivity "on a five-point scale and count smiling, laughing, eye contact, crying, these kinds of behaviors, to see if the deficits that clinicians have noted at the bedside can be quantified in research."

"We've also developed a functional outcome questionnaire that we have caregivers fill out to find out about a patient. And we've discovered that caregivers rate people higher in communicative function when they have good eye contact—as determined by videotape analysis," Blonder says.

Another part of this project involves zeroing in on intonation. "We've edited sentences the patient said before treatment and after treatment, scrambled the order, and the raters will be listening to the sentences and rating how expressive the tone of voice or inflection is."

Her team has yet to analyze the post-treatment videotapes, but so far she's found that aphasic patients say fewer words "per turn," use shorter sentences, give more one-word answers, and more yes/no responses, but smile, laugh and have more facial expression than aprosodia patients. "Patients with aprosodia produce longer sentences, but much less facial expressivity and intonation."

"The whole goal of this research is to see if these treatments—like teaching aprosodia patients to express emotion through word choice and treating semantics and grammar in aphasia patients—work," Blonder says. "I'm interested in understanding more about these communication disorders and how they affect natural behavior. Ultimately, I'd like to use this information to develop personalized behavioral treatments to improve the interaction between stroke patients and their families. That would be my reward."

Why do her colleagues in the UK Stroke Program do this work?

"One reason is the very personal experience of actually being able to stop a stroke from happening. That's rare, but when it occurs, it's very dramatic," Pettigrew says.

Vaishnav agrees: "For me, that's the reason I became a doctor. We now have acute treatments, and it gives me immense satisfaction to see a dramatic change in patients. But the second part, which I also personally enjoy, is being a student about what's next in stroke treatment. In doing clinical work, you see there are still more things to learn, and that's probably what fascinates me most." ■

Odyssey onlineexclusive

Since two issues of *Odyssey* a year can give you only a small sampling of the hundreds of interesting and important research projects under way at the university, last year we came up with a way to further publicize work by UK faculty: *Odyssey Online Exclusive*. Our inaugural issue, in the summer of 2003, focused on faculty who have started new businesses based on their research at UK.

The summer 2004 issue had as its theme new faculty at UK. This issue includes Pradeep Kachroo (plant pathology), Chang-Guo Zhan (pharmacy), Terry Lennie (nursing), Heather Freeman (art), Bob Haven (theater), Fay Yarbrough (history), Bruce O'Hara (biology), and Sara Jo Nixon (psychology).

The article on Nixon and her research on drug and alcohol abuse is reprinted here. We hope you enjoy this expansion of the magazine.—JW

www.research.uky.edu/odyssey/exclusive

W R I T T E N B Y
J e f f W o r l e y

Top Drug Abuse Researcher Now at UK

Asked what professional route she may have taken had she not become a psychology professor, Sara Jo Nixon doesn't hesitate. "You know," she says with a quiet laugh, "I've always wanted to be a conductor of an orchestra. Maybe it's the idea of having something all come together like it should."

We had just been discussing her role as head of a new multi-year project funded by the National Institute on Drug Abuse (NIDA), focused on nicotine, neurocognition and substance abuse.

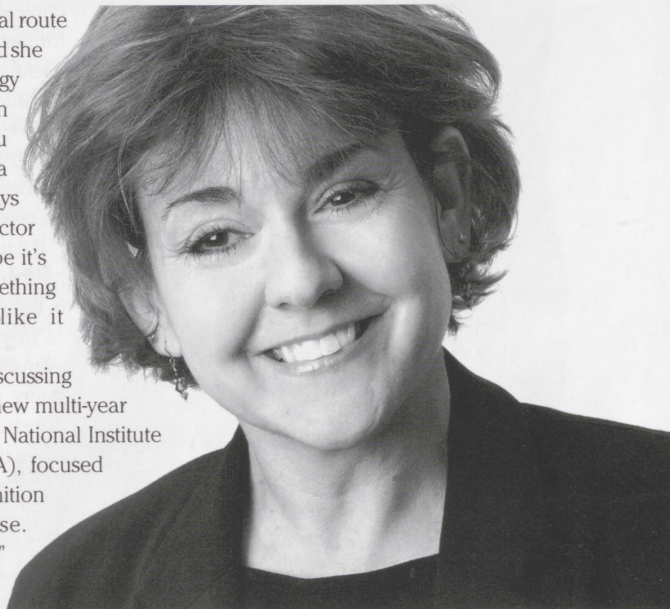
"Now that I think of it," says Nixon, who came to the University of Kentucky last year

from the University of Oklahoma, "being PI on a grant like this is kind of like conducting an orchestra. Every member of the team is essential, with each playing a separate but integrated part."

In orchestrating the NIDA project, Nixon draws on more than 15 years of experience working on the long-term effects of chronic substance abuse on neurocognitive and psychosocial functions, and on the connection between brain dysfunction and behavior. She has authored or co-authored over 125 journal articles and has been awarded over \$4 million in grants, primarily from NIDA and the National Institute on Alcohol Abuse and Alcoholism.

Her current NIDA project began with the unlikely (and in some circles unpopular) premise that nicotine may have some positive effects for substance abusers.

"We know that a large percentage of alcoholics smoke—from 79 to 96 percent of them—but through the course of 40 years or so of abuse studies, that fact has been largely ignored," says Nixon. The strong correlation between substance abuse and smoking, the fact that nicotine has a direct effect on cognitive processes, and the widespread anecdotal evidence that people "feel more



The Murrah Federal Building Bombing

Asked to recall the most memorable event in her academic life, Sara Jo Nixon moves to the edge of her seat and says, "Oh, that's easy—University of Oklahoma, April 19, 1995.

"I was sitting in my office at 9:00—9:02 to be exact—when I heard a huge explosion and felt the windows of my office shake. I looked out a window and saw smoke. So my project coordinator, postdoctoral fellow and I jumped in the car and parked right across the street from the Murrah Federal Building," Nixon recalls. She says she and her team and some others were about to set up a MASH hospital for the wounded when they were alerted to the possibility of a second bomb, somewhere close.

"So we all started running away from that. I'd never run with a crowd of people who were literally running for their lives. Then the police would say, 'down!' and we'd get down," Nixon says. There turned out to be no second bomb, so Nixon returned to set up the on-site hospital.

After a couple of hours, she says, when only a few people had come in, she realized that the mortality rate was going to be high. The nine-story building had been blown into oblivion, leaving 168 people dead.

In the next few days Nixon fielded calls to the department from people locally and nationwide who wanted to do trauma research. And as director of clinical research at the time, it fell to Nixon to coordinate this research. "I had to sort out what people wanted to do and try to get them to work together to avoid duplication of effort."

Nixon and her staff, a few months later, did their own project on the mental health outcome of the firefighters who'd responded to the bombing, and she admits it was a challenging project that called for a lot of delicate handling. "First, it was tough to know what questions to ask. We'd had so little experience with this kind of thing on our soil—like none," says Nixon. As the project went on, Nixon gained even more admiration for the firefighters. "I thought their resiliency was awesome, a resiliency built on community and church support as well as local and national newspaper acclaim."

continued from p. 33

relaxed" and "work better" when they smoke led Nixon to hypothesize that there may be some compensation for substance abusers who smoke.

"We think that for alcohol- and drug-abusers, cigarettes may serve as a cognitive enhancer, somehow masking the negative effects of the other drugs in their system."

Nixon and her staff are currently trying to recruit 360 volunteers for a clinical trial to test her nicotine hypothesis. The majority of these will be former substance abusers. "Though they aren't using drugs now, it's a useful group for us to study because of the residual deficits in the brain after chronic substance use," Nixon explains. There will also be a control group.

"We'll be categorizing people based on which drugs they used, their age group and gender," she explains. "The volunteers will be subjected to various levels of the nicotine patch so we can look at a nicotine dose effect on tasks we ask them to perform."

If it turns out that nicotine does, in fact, mask the effects of alcohol and hard drugs, this trial could lead to different clinical approaches for people in treatment.

"In some treatment programs, people are being encouraged to stop everything at once. Nicotine, too. If nicotine has been serving a compensatory function, actually helping them in some way to make better decisions than they would otherwise, and if nicotine is also taken away when these people are in withdrawal, then they should be in even worse shape and even less likely to be able to respond to treatment in a positive way," Nixon says. "So although we aren't arguing that people should be encouraged to smoke, we do think such a finding would argue for very aggressive substitution therapy in nicotine—patches or gum or whatever works for the particular person."

A second project, which may be even more time-intensive for Nixon and her staff, has to do with the effect of moderate drinking on older adults. "There's an ongoing and growing concern about older people who continue to drink socially. Is it safe for them to drink? To what extent does it affect their driving? A careful, empirical study of the effects of moderate doses of alcohol in older adults and then a systematic evaluation of their performance hasn't been done."

But it soon will be. Nixon currently heads up a pilot study in which people between 50 and 75 will be given low doses of alcohol and asked to do a short set of tasks. She and her staff will be looking at this group's performance and any significant differences among gender and specific age groups.

"We often hear that the aging population is more sensitive to alcohol. At the same time, we read that one to two drinks a day may be healthy. But do these two drinks affect a 50-year-old woman the same as they do a 75-year-old woman? What we want to do in this study is to be more precise about issues of sensitivity to alcohol for various subgroups of

older people." As in her other major study, she and her staff are continuing to recruit volunteers for this trial.

Nixon's road to UK was an unusual one. Born and raised in Oklahoma, she received a B.S. in psychology at Southwestern Oklahoma State University, and her master's and Ph.D. degrees in experimental psychology at the University of Oklahoma. After a brief stint at Iowa State, she returned to the University of Oklahoma for an administrative position, which she held for four years.

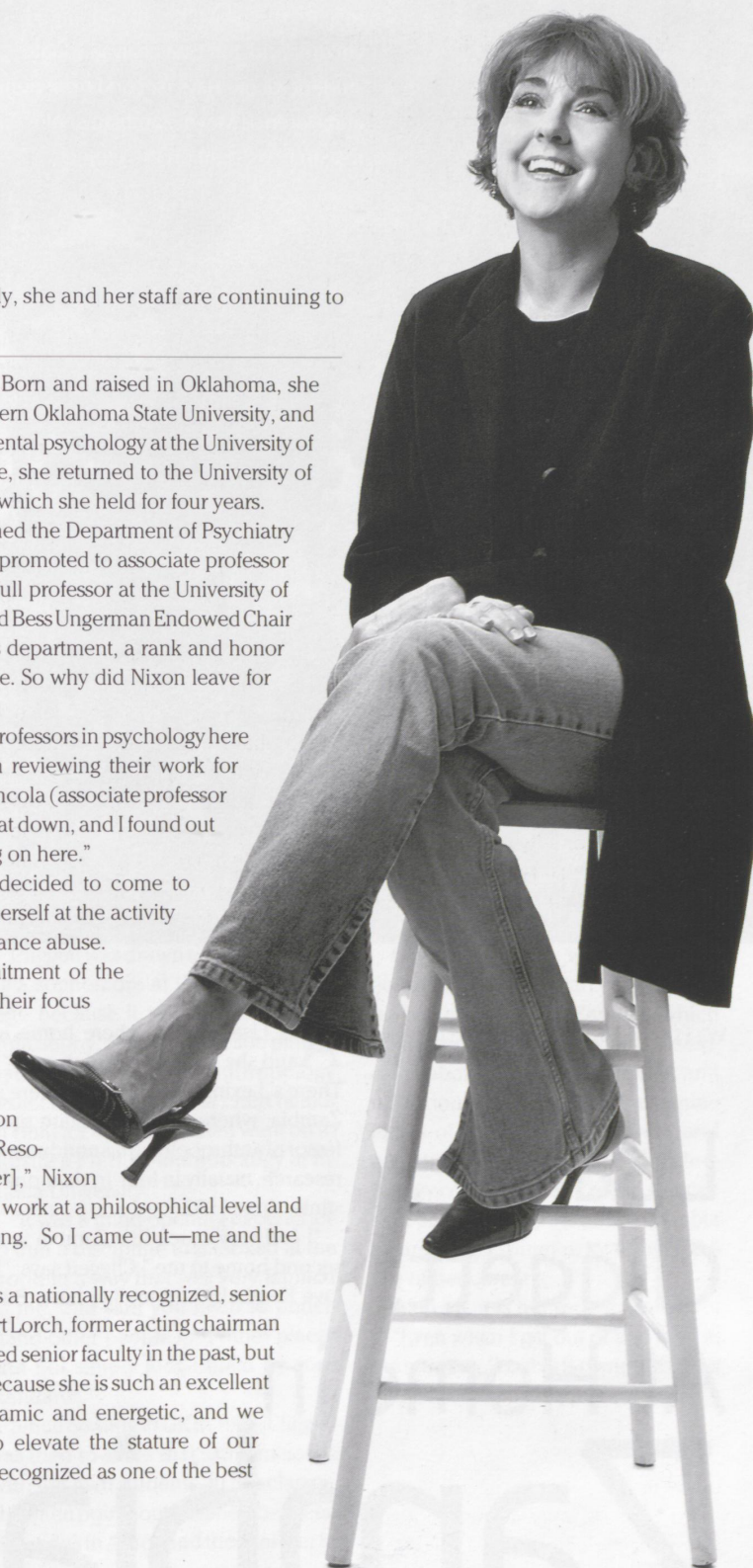
Eager to get back into research, she joined the Department of Psychiatry and Behavioral Sciences in 1987 and was promoted to associate professor two years later. In 2001 Nixon became a full professor at the University of Oklahoma and was awarded the Arnold and Bess Ungerman Endowed Chair in the psychiatry and behavioral sciences department, a rank and honor that usually equals academic permanence. So why did Nixon leave for UK?

"I've known some of the now associate professors in psychology here since they were grad students; I've been reviewing their work for years," Nixon explains. "I ran into Peter Giancola (associate professor of psychology at UK) at a conference, we sat down, and I found out just how much interesting work was going on here."

Nixon was recruited soon after, and decided to come to campus, give a talk, and have a look for herself at the activity under way in neuropsychology and substance abuse.

"I was very impressed with the commitment of the department and college here to expand their focus on substance-abuse issues. Plus, I liked the collaborative nature of this department, and the terrific access to resources through, for example, the Sanders-Brown Center on Aging and the Imaging Center [Magnetic Resonance Imaging and Spectroscopy Center]," Nixon says. "At UK there's a commitment to this work at a philosophical level and a concrete level, and that was very exciting. So I came out—me and the dogs."

"Sara Jo Nixon was hired because she is a nationally recognized, senior researcher in substance abuse," says Robert Lorch, former acting chairman of psychology. "Our department hasn't hired senior faculty in the past, but we made an exception in Sara Jo's case because she is such an excellent fit with our faculty. She's vivacious, dynamic and energetic, and we anticipate that her experience will help elevate the stature of our research program to the point where it is recognized as one of the best in the nation." ■





Lisa Cliggett (left), Ruth Mwisika, a village research assistant, her husband and children, Boston University graduate student Nicole Hays (second from right), and Florence Moyo, Zambian senior research assistant on the project

Written By Robin Roenker

Lisa Cliggett: At Home in Zambia

Ask Lisa Cliggett where home is and she may say, "Which one?" There's Lexington, and then there's Zambia, where the UK assistant professor of anthropology has conducted research, usually in four-to six-month stints, since 1992.

"I feel very much like Zambia is a second home to me," Cliggett says. "I love Kentucky and my life here. But

when I'm out in the village chatting with someone, having a very comfortable, personal exchange, I feel like there's nowhere else I want to be."

From March through July this year, Cliggett's address was Southern Province, Zambia. The accommodations: a camp of tents amid the mud-bricked, thatched-roofed houses of a family's rented homestead. Waking up on cold winter mornings to the herds of goats, pigs, chickens, and cows moving through camp, Cliggett was in her element.

This summer marked her sixth research trip to Zambia, but her first time extensively focusing on issues of migration and environmental change. In their urgency to stake out a claim on the land and a place where they can survive in the midst of economic

and ecological upheaval, Zambians have given their country one of the highest deforestation rates in the world.

With that in mind, Cliggett hopes her project can eventually help inform policy-makers and foster the development of local institutions to support tenure security, thereby reducing deforestation in the country. She has support through 2005 from a \$200,000 National Science Foundation grant to study how the migration and farming practices of the Gwembe Tonga people are transforming Zambia's landscape.

Cliggett's work documents a migration that began in 1958, when the Kariba Dam was constructed on the Zambezi River to create a hydroelectric power station. The dam flooded the whole river valley, forcing more than 57,000 Tonga people to relocate.

"In 1958, the people were relocated to areas that couldn't support them in the long term," Cliggett explains. "So for the past 50 years, there have been problems caused by the dam and relocation. In that time, in an attempt to survive, many of these people have migrated out of the areas to which they were resettled by the government."

Cliggett is studying those who voluntarily migrated from the Gwembe Valley in search of more productive, open frontier lands; she estimates that in the past 20 years, about 1,000 Gwembe Tonga people have migrated out of the valley. Living amid migrant and indigenous families in the frontier, Cliggett visited gardens and agricultural plots, and asked residents about the methods used to clear the new lands.

"A second major question we're exploring is tenure security. Do these people feel secure in their rights to the land? We find that if they don't feel secure, they're more likely to clear the forest very quickly—the idea being that in doing so they show that they have a right to that land."

Cliggett developed the basis of the project in 2001, when she led a group

of UK undergraduate students to Zambia to conduct exploratory field research. This past summer, as part of a field school Cliggett was leading in Zambia, three anthropology graduate students from the United States—including UK grad student Brooke Wyssmann—assisted Cliggett in collecting data.

Though the project is just under way, Cliggett's preliminary findings suggest that younger generations and migrants—as opposed to older, indigenous residents—are more likely to feel insecure in their land rights. So it is these more insecure groups who tend to deforest most rapidly.

Cliggett is careful to point out that, as an anthropologist, she's not an interventionist in Zambia's unfolding story. "I'm not there to say, 'You need to plant differently, or you need to be marking your land,'" Cliggett explains. "But I am doing research that informs policy-makers."

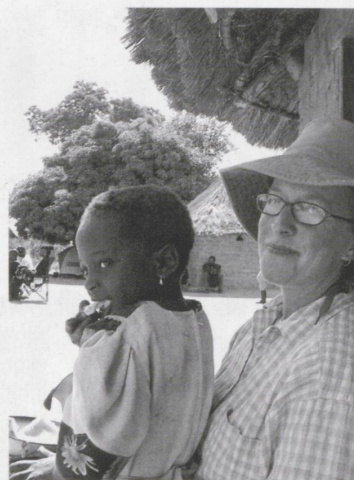
That distinction is important to Cliggett, who says she's always wanted to help people. "Not in that naïve, 'I'm going to save the world' way. But just by recognizing that through communication, people's lives can be helped or better appreciated."

Cliggett was drawn to anthropology as a sophomore at Connecticut College because it resonated with that philosophy. After college, she participated in a medical anthropology project on maternal and child health in Haiti for a year. She then went on to pursue a Ph.D. in anthropology at Indiana University.

"It was a mind-opening experience to find a discipline that looked at the world in a way that was very familiar to me, that said you need to understand other people and other places and not simply judge them by your standards."

Since coming to UK in 1999, Cliggett has tried to share that same message with her own students. In her classes, she often points out parallels between situations in Africa and those closer to home.

"I love that I can talk about a very



Cliggett with Cryness Mwanakopa, one of the daughters of the Zambian family the research team stayed with for five months this year

different place but can still say, 'You know about this because in Eastern Kentucky there's also a problem of absentee landowners or extraction of resources.' And the students get it," she says. "It makes Africa not so exotic and far away."

Cliggett's current work on migration and environmental change builds on her past work in Zambia, which addressed support systems for the elderly, labor, and chronic illness and migration. She next plans to examine issues of food security, growth, and nutrition in Zambia with UK anthropology colleague Deb Crooks. Cliggett says she hopes to return to Zambia summer after summer, for the remainder of her career.

After all, it is her second home.

"Even when I get out of bed here in the morning, Zambia is compelling and tangible as my first cup of coffee." ■

UNIVERSITY
RESEARCH

Written By Robin Roenker

University Research Professors

Subbarao Bondada: Inhibiting Lymphoma Growth

Each year, more than 60,000 new cases of lymphoma, a cancer of the white blood cells, are diagnosed in the United States. Many lymphomas are due to a runaway proliferation of the body's B-lymphocytes, cells that produce antibodies against infectious disease. As the manufacturers of antibodies, B-lymphocytes are usually useful and good; their overproduction, however, can lead to cancer.

Hindering B-cell lymphoma growth is the goal of Subbarao Bondada's research at the UK Sanders-Brown Center on Aging. Currently, his lab is focusing on two aspects of lymphoma growth regulation: a transcription factor called Early Growth Response Gene 1 (EGR-1) and an enzyme known as c-Jun N-terminal Kinase (JNK). Transcription has to do with making an RNA copy of a DNA segment of a gene.



Bondada's earlier research showed that "if you inhibit the expression of EGR-1, you can inhibit the growth of B-cells." Now, his research team will try to determine whether inhibiting the expression of EGR-1 can prevent some lymphomas from developing altogether. The team will also work to better understand the role of JNK, which is active in some lymphoma cells but inactive in most normal B-cells.

"Very few people are working with EGR-1 in the context of lymphoma, and as far as I know, no one else has looked at JNK expression and how that could be related to lymphoma growth," says Bondada, a professor in UK's microbiology, immunology, and molecular genetics department. In addition to helping fund Bondada's research, the University Research Professorship allowed Bondada to add a postdoctoral assistant to his research team.

"The biggest challenge we face is to translate our findings from tissue culture about the importance of JNK for lymphoma growth to animal models and then to human systems. It's difficult because the same kinases that support the lymphoma growth may also be important for normal function of other cell types in the body."

Bruce Webb: Linking Insects and Illness

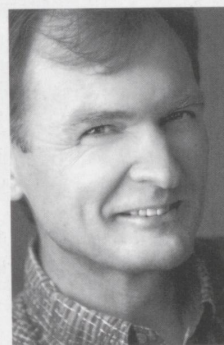
As a researcher interested in the interaction between microbes and insects, Bruce Webb didn't expect to find himself working on Mare Reproductive Loss Syndrome (MRLS). But since the 2001 MRLS outbreak, which resulted in thousands of equine abortions across Kentucky and neighboring states, Webb's lab has been immersed in studying the eastern tent caterpillar's role in the disease.

The caterpillars are "absolutely part of the cause," says Webb, a professor of entomology who came to UK in 1995. But he believes their link to MRLS has nothing to do with cyanide from wild cherry trees, as originally proposed.

Webb's hypothesis, developed with Karen McDowell (veterinary science), Neil Williams and Mike Donahue (UK Livestock Disease Diagnostic Center), and Kyle Newman (Venture Laboratories in Lexington), is that ingestion of caterpillars by horses causes lesions in a horse's mouth and intestines, allowing normal bacteria from these sites to enter the horse's bloodstream. The bacteria then invade fetal tissues and replicate to produce infections, which ultimately cause abortion.

Since 1988, Webb has also investigated links between insects and viral infections through his work with polydnaviruses, viruses that cause an AIDS-like suppression of insect immunity. "Insects' ability to transmit disease is dependent on their immune system," Webb explains. "So, the better our understanding of insect immune systems, the better able we are to prevent the transmission of disease by insects."

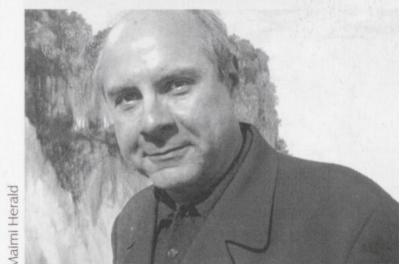
Webb plans to use his University Research Professorship to continue to study the diverse interactions between insects and microbes.



PROFESSORS

2004-2005

Enrico Mario Santí: Octavio Paz's Intellect and Poetry



Miami Herald

Enrico Mario Santí hopes to finalize his biography of Mexican poet and essayist Octavio Paz within

the next year. It's a special project for Santí, since he and Paz, winner of the 1990 Nobel Prize in Literature, were friends.

Santí first began the biography in 1983, but he set aside the project when Paz asked him to work instead on a series of critical editions of Paz's work.

"We became very close," says Santí, who came to UK as the first William T. Bryan Endowed Chair in Hispanic Studies in 2000. "Working on editions of Paz's poems and essays allowed me to learn much about the man and his work."

Paz "transformed poetry for the post-war reading public," Santí says. "His poems are at once rigid and sensual. They are intellectually stimulating and creative in their images." As an essayist, Paz was the "first to bring major movements such as existentialism and structuralism into Hispanic literature."

Even after his death in 1998, Paz remains a controversial figure in Mexico. His gradual rejection of communism and socialism, and decades-long campaign to democratize Mexico made him a lot of enemies, says Santí.

The University Research Professorship has allowed Santí to take a break from teaching to give full attention to completion of his manuscript, which he calls an "intellectual biography" of Paz: "My focus is on looking at the man in order to better understand his body of work, rather than the other way around."

The UK Board of Trustees first awarded University Research Professorships in 1977. The goal of these \$35,000, one-year professorships is to enhance scholarly research and awareness of UK's research mission by recognizing outstanding faculty.

Peter D. Hislop: Modeling Conductivity

UK mathematics professor Peter Hislop is trying to answer a question that has perplexed mathematical physicists for decades: Why is electrical conductivity finite?

"Only a limited current is available in a socket," Hislop explains. "Infinite conductivity means that the electrons in a wire would be continuously accelerated without losing any energy, as if there was no friction. But this isn't the case."

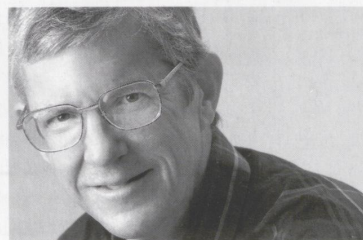
In trying to find the answer to this question, Hislop draws on aspects of quantum mechanics and what is called the Schrödinger equation, which describes the interactions between electrons and atomic nuclei. This noninteracting, one-electron model of solids was first developed in the 1920s. Despite the model's merits, it has some "fundamental problems," says Hislop. In some cases, for example, the model predicts instances in which metals would demonstrate infinite conductivity, a phenomenon not observed in nature.

To address this problem, a new model with randomly distributed impurities and de-

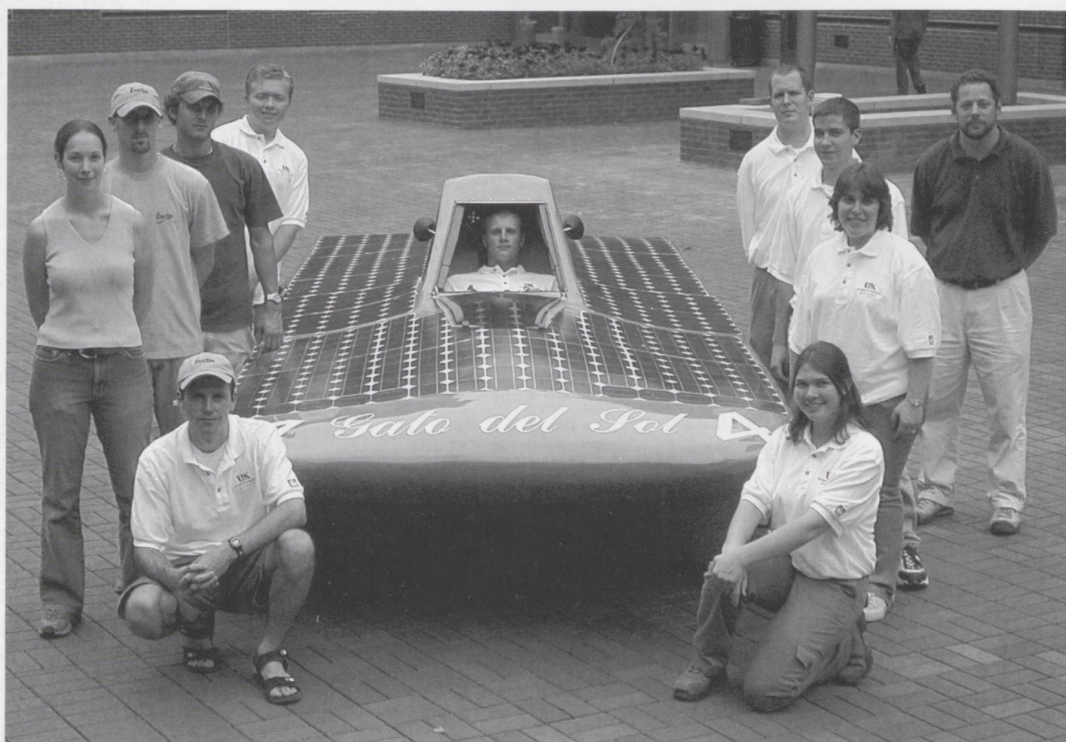
fects was introduced in the 1950s by Nobel Laureate P.W. Anderson. Focusing on a particular type of mathematical operator called "a random Schrödinger operator," Hislop's work aims to understand the fundamental properties of Anderson's model that will help to identify the "physical mechanisms responsible for the finite conductivity of metals observed every day," he says.

"My work is basically pure research—trying to understand why materials conduct electricity and how efficiently they do so. A better understanding of this could add to the design of better materials for power lines, for example." Hislop's research has been continuously supported by the National Science Foundation since he arrived at UK in 1989.

In addition to his research, he will use funding from the University Research Professorship to support a seminar speaker series and workshop at UK this year on random Schrödinger operators.



Left row (starting in front): Dale Reid, undergraduate; Christine Trinkle, Ph.D. student (now at UC Berkeley); Chris Morgan, Ph.D. student; Matt Hayden, grad student; B. J. Hinkle, undergraduate. Right row (starting in front): Karen Robb, undergraduate; Bianca McCart, grad student; Kirk Stechschulte, undergraduate; Robert Greer, undergraduate. Far right: Scott Stephens. Seated in the car: Kirk Fallis, undergraduate



Here's What's New under the Sun

If you saw Gato del Sol round the track and screech to a halt right in front of you, you might expect some kind of caped crusader to step out. Gato del Sol, named for the 1982 Kentucky Derby winner, was built by a cadre of current and former UK students, primarily from engineering. It took four years and about \$100,000 to build.

It's a true mix-and-match creation: It has shocks from a mountain bike, a steering wheel from a kid's dragster, and various other donated parts, all wrapped in an aluminum frame and UK-blue fiberglass body.

Last May, the solar car competed in the Formula Sun Grand Prix in Topeka, Kansas, the first time a UK-built solar car had run in that race.

"We did well, I'd say, especially since we're really new at this," says Scott Stephens, a UK associate professor of mechanical engineering who advises the group of 20-plus students. UK placed second in the stock class in the three-day, 2.1 mile race, trailing only Kansas State University.

Solar cars are powered entirely by the energy of the sun, through photovoltaic solar cells that charge batteries. A 1,000-pound car runs at an average speed of 35 mph. Since there are limitations on how much energy can be generated and stored, solar cars must be energy-efficient to maximize the speed and distance the car can travel, which is accomplished by making the car as light as possible and minimizing wind resistance.

In 2003, the team's rookie year in competition, the car was entered in the American Solar Challenge, a 10-day run from Chicago to California along famous Route 66. "Our inexperience showed," says Stephens. "Due to overcast skies and mechanical problems, the Gato del Sol failed to finish the 140-mile qualifying race."

But just being given the white flag to compete in the race is an accomplishment, Stephens says.

"This year there were four schools that didn't pass what race officials call 'scrutineering,' so these schools

didn't get to ride at all. That's fairly common, especially on your first try. When you go in, you have a list of requirements your car has to meet—braking and steering requirements, maneuverability. If the car isn't solid and sound enough, you can't even get into the race."

A handful of UK students started this project four years ago, Stephens says, and that group has ballooned to over 25 current and former students.

Former students?

"Yeah, this has been most amazing to me. Each year we have UK grads from Lexmark and other businesses in the community who come back and work with this group. That's how excited the students get about this.

"We always talk about teamwork in our curriculum and try to have team-building experiences in our engineering classes. On a project like this, with so many students, the mechanical people have to learn how to talk to the electrical people so that everything works. It's teamwork with a capital 'T.'"

Another benefit for students, he adds, is being able to apply classroom work to real-life situations.

"A lot of students go through the engineering program and think, 'Well, there's a lot of math here that I probably won't ever use after I graduate.' These kids find out that the math actually works. I think it really gives them new appreciation for what they're learning in class."

Gato Del Sol is a project heavily dependent on the kindness of strangers, Stephens says. Team sponsors that donate various auto parts (or cash) include SunPower Corporation, Ashland Specialty Chemical Company, Kentucky Transportation Center, Risse Racing Technology, Fifth Third Bank, EnerSys Inc., Hydro-Aluminum, and others.

"The 'Big Blue Bomb' is what we call it," jokes Chris Morgan, a doctoral candidate in mechanical engineering and a veteran member of the solar team. "We're still learning."

—JW

UK's Largest College Has a New Dean

Jay Perman wasn't at all unhappy as professor and chairman of the Department of Pediatrics in the University of Maryland School of Medicine. He enjoyed his work. His colleagues were bright and hard-working, and Perman liked doing clinical rounds—helping less experienced doctors and talking with kids who had various health problems.

So why did he come to UK?

"I had begun to realize at Maryland that as chair of pediatrics what I really enjoyed most was the opportunity to create warm, well-functioning environments for smart people, which is really the job of a dean," says Perman, who became dean of UK's College of Medicine and the university's vice president for clinical affairs last May. "I had evolved into a 'dean mind-set,' I realized. I loved it when a faculty member I had encouraged would come in and say, 'I just got my paper accepted in *Nature* or *Science*,' or a resident would come in and say, 'I just had a wonderful rotation and wanted to thank you for the fact that the teacher was so good.'"

So when his name was put forward by outgoing College of Medicine dean Emery Wilson, now director of the college's Area Health Education Center, Perman jumped at the chance.

"Truthfully, one of the reasons I wanted to come here is because I like places that have a lot of ambition, and UK certainly has that. I like places that aren't full of themselves, that don't think they're already at the top of the mountain. I wanted to help move a college into new and significant directions, but first you have to have a place that wants to be moved. I loved the sparkle of ambition I saw here."

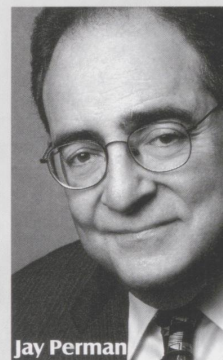
As dean, Perman has the daunting responsibility for the leadership and management of the largest college at UK—21 academic departments, 12 centers, over 700 faculty, 1,800 staff members, 823 medical and graduate students, and 500 residents and fellows. How can one man accomplish such a thing? Is he planning on working 20-hour days?

"Yeah, I work hard, but it's the usual secret. If you have a lot of good people around you, you can do all of that. The current leadership of those departments and centers is very good."

Perman's career has taken him from the Midwest to the East Coast to the West Coast and back east again. He received a Doctor of Medicine degree with Distinction in 1972 from Northwestern University in Chicago, completed a fellowship in pediatric gastroenterology at Harvard Medical School and at the Children's Hospital Medical Center in Boston. Then from 1977 to 1984, he was in the pediatrics department at the University of California, San Francisco. After 12 years at Johns Hopkins University School of Medicine as professor of pediatrics and three years as chair of pediatrics at the Medical College of Virginia in Richmond, he went to the University of Maryland School of Medicine.

"In addition to being an accomplished investigator and an advocate for medical education, he is a consummate clinician who still practices pediatric gastroenterology," says UK Executive Vice President for Health Affairs Michael Karpf. "He also is a respected leader who can help focus the faculty on achieving excellence in all three of their mandates—research, education and clinical care."

—JW



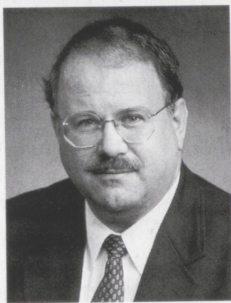
Jay Perman

National Leadership Award Named for Joseph Fink

The American Society for Pharmacy Law (ASPL) has recognized a University of Kentucky faculty member and administrator by naming a national leadership award for him. Joseph L. Fink III, senior associate vice president for research and economic development and UK College of Pharmacy professor, was recently honored by the creation of the Joseph L. Fink III Founders Leadership Award during the ASPL's 30th anniversary observance. The award will be presented periodically to recognize individuals who have made substantial contributions to leadership and scholarship in the field of pharmacy.

The ASPL has more than 400 members from across the nation and several other countries. Fink was the founder and the first president of the organization.

Fink earned a degree in pharmacy at the Philadelphia College of Pharmacy and Science, and his Doctor of Law degree from Georgetown University Law Center in Washington, D.C. He joined the UK faculty in 1981.



Fink's 250 scholarly works include books, monographs, chapters, and articles in the fields of law pertaining to pharmacy, pharmacists and pharmaceuticals, food and drug law, and health-care law. For more than 20 years, he has been an editor of *Pharmacy Law Digest*, the most widely used pharmacy law text and reference in the United States.

"I am particularly honored by the award coming from my professional colleagues and peers, and the fact that my wife, sons and their wives—plus my grandson—surprised me by coming to Seattle for the award presentation," says Fink.

—UK Public Relations

IHDI's First Kevin Burberry Award Recipients Announced

The first Paul Kevin Burberry Award recipients have been announced by UK's Interdisciplinary Human Development Institute (IHDI). The \$500 awards, named in honor of an outstanding student at UK with disabilities, were presented to Tony LoBianco and Christy Howard-Potter.

Kevin, who was majoring in philosophy at UK, died in September 2003. He graduated posthumously with honors in May 2004. In addition to his studies, Kevin was involved in a variety of university and civic activities, including work as a consultant on a research project at IHDI.

"Kevin was such a shining star and source of inspiration for all people," says Harold Kleinert, IHDI executive director. "We are excited to be able to offer this award as a tribute to Kevin's accomplishments not only in the classroom, but also in life."

The award will be given annually to a student who has significant IHDI involvement—as a research assistant, a practicum student or a student in the graduate certificate program. Candidates must demonstrate a strong commitment to people with disabilities through university and community projects and experiences, demonstrate the leadership qualities exemplified by Burberry's own life, and demonstrate a commitment to academic excellence. This year's selection committee, which included Burberry's parents, Clyde David and Susan, decided to grant two awards due to the outstanding field of applicants.

Tony LoBianco, who earned a Ph.D. in political science from UK in 2001, recently received his master's degree in public health. At IHDI he was employed with the Pre-service Health Training Project, where he worked in collaboration with Kevin. LoBianco also produced interactive multimedia training for health-care professionals so they can more effectively serve and communicate with people with developmental disabilities.

"I am honored to be thought of as someone who embodies some of Kevin's qualities, and am thankful to have had the opportunity to know him," says LoBianco.

Christy Howard-Potter recently received her master's degree in social work at UK. During her four years at IHDI, she was involved in more than nine research, service and product-development activities. Her work included development of a community resource manual for families

and consumers, which is distributed statewide in English and in Spanish.

"I am very honored to receive the award alongside my co-worker Tony LoBianco," says Howard Potter. "To me, Kevin epitomizes sheer determination and illustrates the concept that you really

can do anything you set your mind to. He continues to be an inspiration, and I am grateful to have had the pleasure of meeting him."

IHDI works to improve life opportunities for persons with disabilities and their families through interdisciplinary training, research, technical assistance, community education and information dissemination.

To read more about Kevin, see the Spring 2001 *Odyssey* feature titled "Technology with the Human Touch" at www.research.uky.edu/odyssey/spring01/humantouch.html.

—JW

KGS a National Leader in Digital Mapping

The Kentucky Geological Survey (KGS) has reached a milestone in the history of geologic mapping in the United States. In a comprehensive eight-year project, KGS has converted to digital format 707 printed geologic quadrangle (GQ) maps for Kentucky.

"In 1978, we became the first state of significant size in the nation to achieve complete detailed geologic map coverage," says KGS director Jim Cobb. "We are now the first state to have complete digital geologic map data for the entire state. This provides an incredible foundation of geologic information that is easily accessible, inexpensive and widely distributed to private citizens, industry, government officials, and academics." The process of converting the original printed GQ maps into digital format began in 1996.

The conversion of the paper maps into a digital format has numerous benefits, Cobb says. Many of the original GQ maps are out of print. Also, the digital format allows changes to be readily made to the original map data. This saves time and money because it would be prohibitively expensive to print revised maps.

Kevin Burberry
1968-2003



Digital data from each quadrangle can be distributed easily to users on CD or through the Internet, making the data much more accessible. The digital format also allows users to manipulate and analyze the data in a variety of computer applications and is particularly useful in geographic information systems.

—UK Public Relations

New Water Institute Director Named

Lindell Ormsbee, professor of civil engineering at the University of Kentucky, has been named director of the Kentucky Water Resources Research Institute (KWRI) at UK. He has served as associate director of the institute since 1995.

Ormsbee has been a leading researcher on the environmental cleanup at the Paducah Gaseous Diffusion Plant, where groundwater contamination was discovered in the late 1980s. His work has generated more than \$3 million in research projects from the National Science Foundation, the U.S. Geological Survey, the U.S. Department of Energy, and the Environmental Protection Agency.

"Lindell Ormsbee has an extraordinary wealth of knowledge and a deep well of curiosity regarding water resources. These qualities make him the best choice for the leadership of this institute, whose work is so critical to the commonwealth and its residents," says Wendy Baldwin, UK's executive vice president for research.

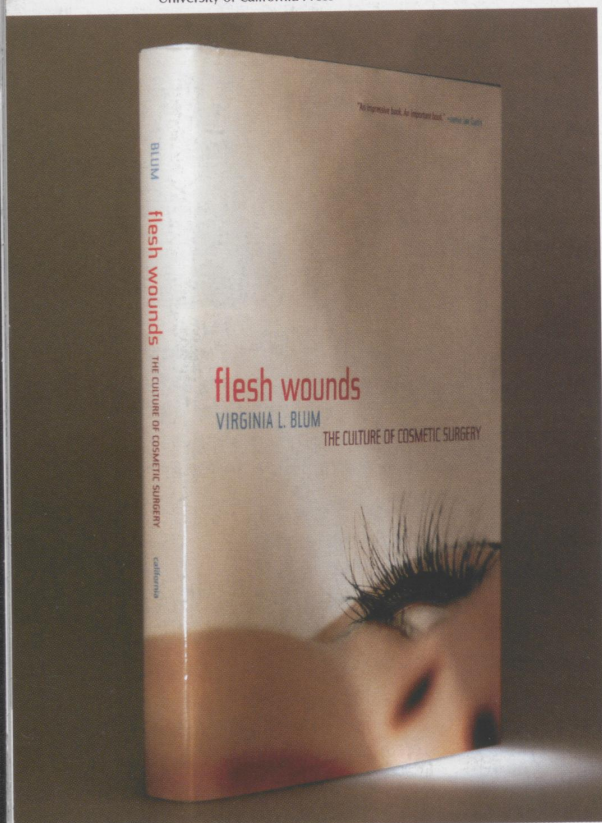
KWRI stimulates water-related environmental research, assists academic units in conducting undergraduate and graduate education in environmental areas, and develops statewide interactions among faculty and research staff, and the private and public sector.

—UK Public Relations

Book End

Cutting Culture

Flesh Wounds: The Culture of Cosmetic Surgery
by Virginia L. Blum
University of California Press



Extrême Makeover, “The Swan” and “I Want a Famous Face” are a few of reality TV’s offerings to satiate America’s obsession with the perfect “after” photo. Virginia Blum, a UK associate professor of English and author of *Flesh Wounds*, says the popularity of such shows bolsters her premise: Hollywood celebrity culture in TV, movies and magazines has contributed to the booming cosmetic surgery culture.

“All of the programs that have come out since the publication of my book, I think, just validate my point that cosmetic surgery is about ‘becoming’ a celebrity—it’s about identifying with celebrity images.”

Blum talks about an interview she read recently with actor Kate Winslet, who was horri-

fied that a woman on MTV’s “I Want a Famous Face” had her body surgically tailored to look like an airbrushed image of Winslet. “It was clear from her commentary that Winslet feels if more celebrities show what their bodies really look like, as Jamie Lee Curtis has [Curtis appeared without makeup, hair styling or designer duds in *More* magazine in 2002], that would help. But I don’t think so,” Blum says.

“People aren’t identifying with the flesh-and-blood actor; they’re identifying with the technology. They know photos are retouched, but they truly want to look like the digitally altered pictures. One of the reasons image-based icons are so compelling is precisely because they’re in the two-dimensional arena.”

Blum says by harnessing the “scandal”—the extremeness of cosmetic surgery—these TV shows are actually turning it into a normalized, middle-class practice. They feed the idea that normal people will want to have surgery to feel better about themselves.

And Blum speaks from experience: At age 18, she learned her mother thought it was her duty to have her daughter’s nose “fixed.” “I was the reticent one in the face of my mother’s insistence,” Blum writes. At the doctor’s office, the allure of a model’s photo and the doctor’s promise that Virginia, too, could be a “10” swayed her to agree to surgery. One botched nose job, and a subsequent “rescue” operation, gave her an intimate knowledge of the expectation versus reward of plastic surgery.

Her personal story sets up an academic crossover book that combines diverse viewpoints, from surgery patients and feminist cultural critics (like Blum’s UK colleague Susan Bordo, a respected body-image scholar), to explore the realities and fantasies that have made risking death to get a new face a cultural norm.

In interviewing 39 board-certified plastic surgeons and 11 patients, Blum chose to wear a “humanist” hat. “I think a lot of social scientists expected me to make claims premised on data to prove a certain point, but I did the interviews because I was interested in peoples’ stories. My goal from the beginning was to collect the ‘fictions’—the combination of cultural stories that allow us to feel like cosmetic surgery is normal and good.

“My point is that surgery doesn’t make people feel good—both because it often doesn’t fulfill patient expectations and it’s structurally addictive.”

She did not set out to castigate plastic surgeons or those who choose to have surgery, but Blum ends the book with a warning: “It is a circuit that takes you from one doctor to the next, from one procedure to the next; for a while you are exhilarated, as you wait for the beautified part to emerge from the swelling, and then you are back to the mirror, the drawing board of your desire.”

—Alicia P. Gregory

Parting Shots

"In the realm of scientific observation, luck is granted only to those who are prepared."

—LOUIS PASTEUR

"I have not failed. I've just found 10,000 ways that won't work."

—THOMAS EDISON

"An expert is a man who has made all the mistakes which can be made, in a narrow field."

—NIELS BOHR

"If we knew what we were doing it wouldn't be research."

—ALBERT EINSTEIN

"Research is the process of going up alleys to see if they are blind."

—MARSTON BATES

"Research serves to make building stones out of stumbling blocks."

—ARTHUR D. LITTLE

"Numbers are like people; torture them enough and they'll tell you anything."

—ANONYMOUS

"The outcome of any serious research can only be to make two questions grow where only one grew before."

—THORSTEIN VEBLEN

"Science may set limits to knowledge, but should not set limits to imagination."

—BERTRAND RUSSELL

"Statistics: The only science that enables different experts using the same figures to draw different conclusions."

—EVAN ESAR

Odyssey

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