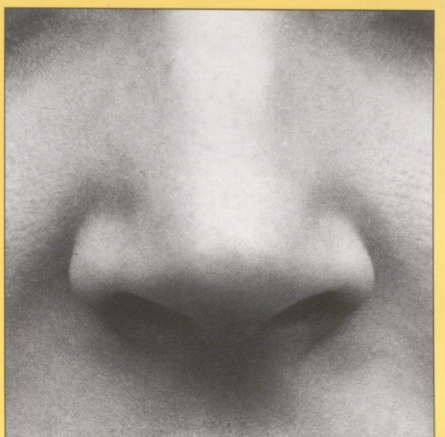
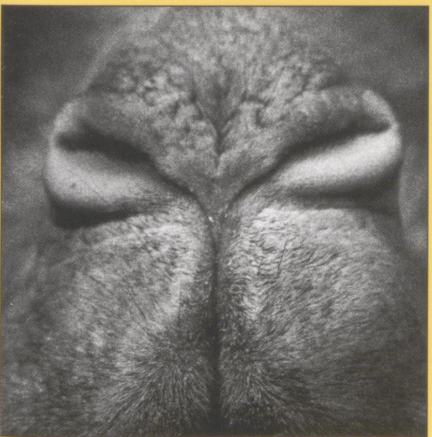
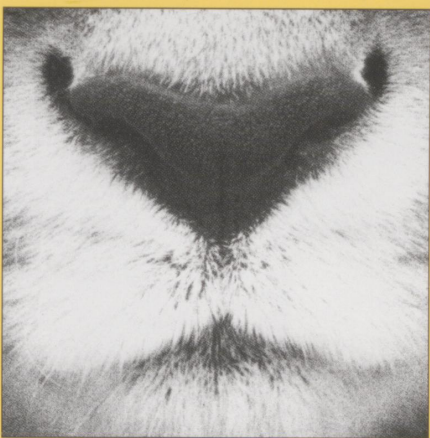
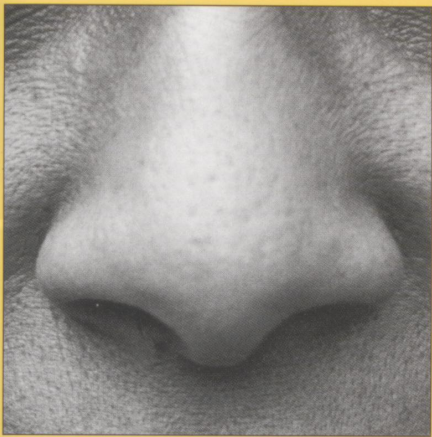


• THE MAGAZINE OF UNIVERSITY OF KENTUCKY RESEARCH • WINTER/SPRING 1997 •

ODYSSEY

THE NOSE KNOWS: PHEROMONES AND THE SIXTH SENSE



Guide to Noses



Human



Giraffe



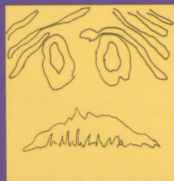
Seal



Elephant



Leopard



Monkey



Camel



Ostrich



Human

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THE NOSE KNOWS:

PHEROMONES AND THE SIXTH SENSE

Good, good, good, good vibrations.

—*The Beach Boys*

Why is it you'd rather spend time talking with colleague A than colleague B? You have a lot more in common with B—she's interested in the same books, the same movies, the same music. It's just that, well, you feel more *comfortable* when you're with A, more at ease. She somehow brings out the best in you.

What you might ascribe to "good vibrations," shortened to good vibes in the feel-good '70s, may turn out to be scientific fact. The comfort zone colleague A seems to create may be due to invisible, odorless substances called pheromones, and their effect upon your vomeronasal organ, or VNO, a tiny cigar-shaped pit found about one-half inch up into each nostril. The mystery of good vibes and how they work their magic on us may, in fact, lie right under our noses.

An ongoing study at the University of Kentucky is attempting to unravel this mystery. Thomas Getchell, associate dean for Research and Basic Sciences in the College of Medicine, and Marilyn Getchell, a professor in otolaryngology surgery at UK's Sanders-Brown Center for Aging, have been working together to further our understanding of what some scientists are calling "the sixth sense."

"Our mutual interest in the human VNO followed pretty naturally from years of research on sense of smell and sense of taste," says Thomas Getchell, who met Marilyn at Northwestern University in 1966 when they found themselves working in the same laboratory. "We've always conducted our own

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independent research on separate projects," Marilyn Getchell adds. "Tom's focus has been more on neural biology and mine has been on neural endocrinology, but what interests us most is how these two areas are integrated." Endocrines, she explains, are internal secretions (hormones) which are distributed in the body through the bloodstream.

Their current research into the pheromone phenomenon is centered on analyzing properties of the vomeronasal organ, using autopsy specimens to investigate the expression of molecules that are characteristic of olfactory receptor neurons. In this research, being carried out in Marilyn Getchell's lab at the Sanders-Brown Center, the researchers worked to determine whether the VNO, like the olfactory organ in humans, has a nerve tract to the brain.

"This neural pathway is easy to see in, for example, the VNO of a rat or a hamster or a guinea pig," says Thomas Getchell. "Rat pheromones interact with receptors in the animal's VNO, setting off nerve impulses that dash right up through nerve cells. But does it work this way in humans? And if not, how does this sensing organ work? This was our starting point."

What are Pheromones?

Pheromones (from the Greek *pherei*, which means "to convey") are chemicals that one animal gives off to communicate a message to other members of the same species. The message might be one of fear or warning. In wood ant colonies, for example, soldier ants respond to any intruder by releasing an "alarm pheromone." Soon, all the soldiers are scurrying around with their mandibles open, ready to attack.

But the pheromones that have fascinated scientists for decades are the so-called sex pheromones that one sex emits to influence the opposite sex. From fruit flies to moths, hamsters and even kangaroos, pheromones rule. When a sex pheromone called bombykol drifts over the bushy antennae of the male silkworm, Marilyn Getchell explains, the male single-mindedly flies upwind, sometimes for almost two miles, to find the pheromone's source: a female silkworm ready for mating. And as Karen Wright points out in a recent *Discover* article, researchers have long known the effect on the female prairie vole's VNO when blasted by pheromones from the urine of the male: her ovaries swell, her uterus triples in size, and she ovulates within two days.

"The vomeronasal organ is very well described and functionally characterized in most mammals," says Marilyn Getchell. "It's very well known in pigs, for instance. To mate pigs, farmers use pheromones—one brand is called Boarmate—to stimulate the sow to be submissive." When a female gets a whiff of the pheromones in a male pig's breath, she just can't help herself.

So if animal pheromones are so powerful, why haven't human

The pheromones that have fascinated scientists for decades are the so-called sex pheromones that one sex emits to influence the opposite sex. From fruit flies to moths, hamsters and even kangaroos, pheromones rule.

pheromones been much studied until lately? It's a good question, especially since our culture seems so utterly obsessed with sex.

"The primary reason," explains Thomas Getchell, "is that until recently scientists believed that adults had no functioning vomeronasal organ, that it disappeared or became non-functional shortly after birth." So even though pheromones and their legendary effects in the sex lives of animals were well known, researchers concluded that people just got by without them. Besides, the reasoning went, if something so profound were happening right under our noses, wouldn't we know it?

Re-Discovering Our "Erotic Nose"

It was a very curious and unprecedented incident in the laboratory of a University of Utah physician in the early 1960s that led scientists to reopen the Case of the Disappearing VNO.

David Berliner, a physician and researcher, was working at this time to characterize the chemical components of human skin. Scraping cells from the discarded casts of skiers with broken bones, he studied numerous compounds from skin and happened to leave them in open flasks in the laboratory.

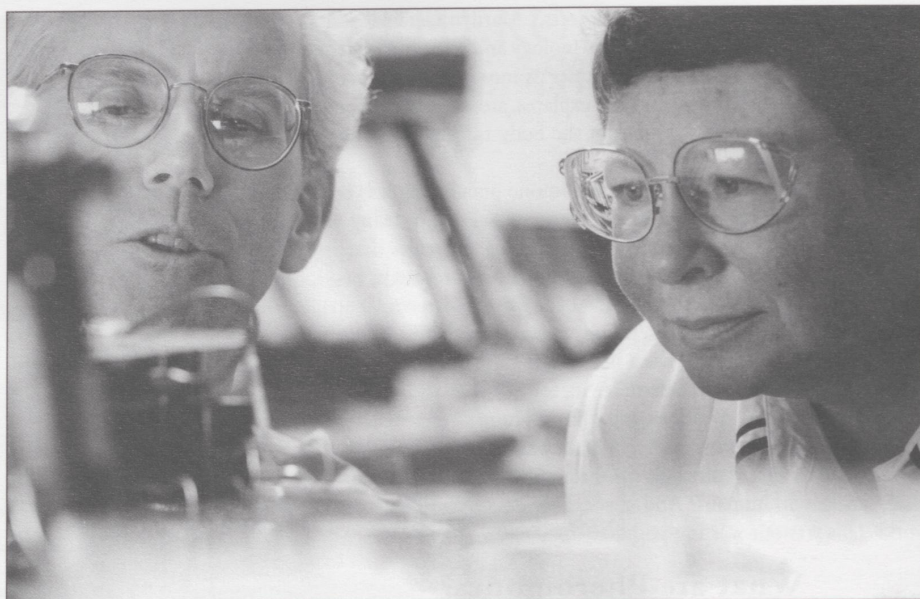
"Soon I noticed that people in the lab were unusually friendly and relaxed," he said in a recent *New York Times* interview. "Someone in the group even suggested we all learn bridge over lunch. Bridge! We all said, 'Sure!' But when I covered the flasks a couple of days later, everyone went back to their usual grumpy selves, and bridge stopped automatically. No more bridge." When Berliner brought out the extracts several months later, the curious *bonhomie* again swept the lab, and the bridge games continued.

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THE NOSE KNOWS

Several dozen pheromone tests have shown that the substances can evoke physiological reactions which include changes in heart rate, respiration, pupil size, and skin temperature. Responses vary from person to person, and some of the compounds affect only men or only women.



USING EXTRACTS FROM NASAL TISSUES, THOMAS AND MARILYN GETCHELL LOOK FOR PROTEIN MOLECULES CHARACTERISTIC OF ODOR OR PHEROMONE DETECTION.

Berliner became occupied with other research matters and stuck these vials in a freezer and forgot about them for over 20 years. In 1989, around the time the good vibes of the '60s and '70s redefined themselves as pheromones, he asked Larry Stensaas, a neuroanatomist at the University of Utah, to work with him to try to understand the human VNO and how it might function to trigger these warm, human feelings. Stensaas had worked with Berliner for many years. And from various professional conferences, Stensaas had also gotten to know Thomas Getchell.

"I was asked to join this project around 1990," Getchell says, "because of my background in neurobiology. Larry was looking at the anatomy of the VNO, and I was brought in primarily to look at the neural properties of the tissue samples they sent. Marilyn enthusiastically joined us in this work." The Getchells set to work to solve this important piece of the pheromone puzzle.

The early fetal slides Stensaas sent were fol-

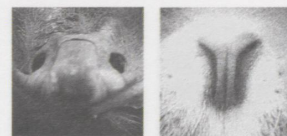
lowed by adult tissue samples, and the UK researchers consistently found this allegedly absent organ, the VNO, in the samples they analyzed.

"Soon after we began our work at UK, another University of Utah researcher, Luis Monti-Bloch, a longtime friend of Stensaas' who'd spent decades studying the function of chemoreceptors, joined the investigation," says Thomas Getchell. In the next few months Monti-Bloch, a physician, designed a system for delivering chemical substances to the VNO and measuring any electrical impulses on the surface of the organ, a process that Thomas Getchell was soon to experience firsthand: he volunteered to be one of Monti-Bloch's first test subjects.

"I can say right off that it's a painless procedure," Getchell attests. "You lie on your back on a lab bench, and a thin instrument called a nasal speculum is inserted into a nostril. The doctor's headlamp beams up into your nostril and—if he knows what he's looking for—the vomeronasal

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pit can pretty easily be seen." A "very small microelectrode" was then inserted into the opening of the VNO, and through a small odor delivery tube a human pheromone extract was "puffed" into the VNO.

"The whole procedure took 30 to 40 minutes," Getchell says. "It was actually fun." He says he could not detect an odor, so the substance was not stimulating any olfactory nerves. Peaks and valleys of electrical impulses did jump onto the screen of the electrovomeranosogram (EVG), however, which meant that the VNO was processing this "scent"; but it was clearly bypassing the olfactory neurons in doing so. What Getchell had "processed" turned out to be a natural isolate from human skin cells.

Getchell explains that for human pheromones to "work," they need a human cell trigger of some kind, since they affect only members of the same species. Moth pheromones drive moths crazy, but not fruit flies, for example, and dog pheromones scare away less dominant dogs but have no effect at all on cats. It made sense, then, that synthesized pheromones from human skin would set off the EVG, which is exactly what happened.

VNO'S Pathway to the Brain

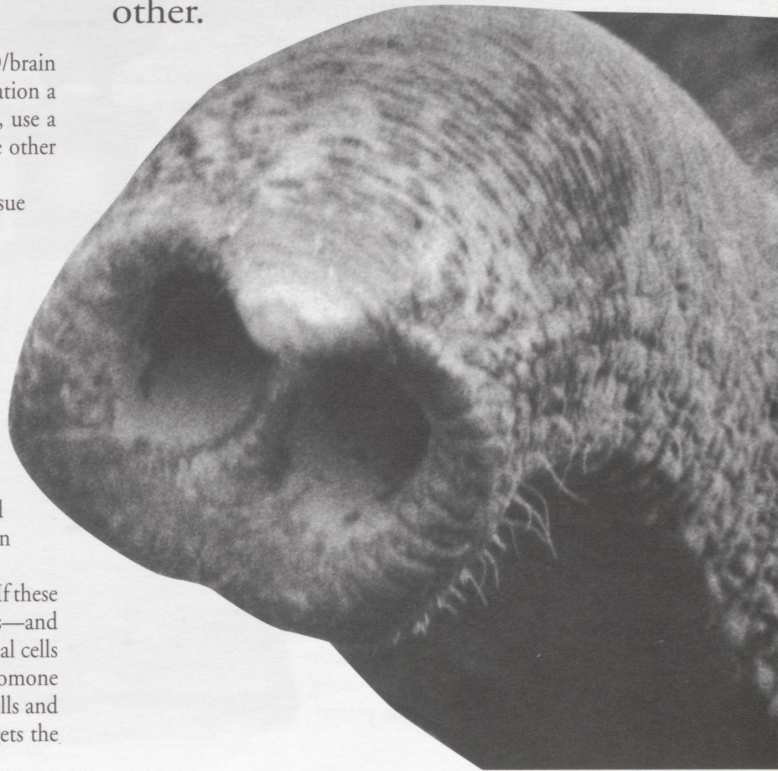
Having had it personally demonstrated that there was a VNO/brain connection, Getchell came back to UK to take the investigation a step further. Did the VNO, he and his wife Marilyn asked, use a separate neuronal pathway to the brain? Or was there some other non-neural pathway involved?

"We looked at the expression of molecules in our tissue samples and found that there were cells within the VNO organ that are similar in size and shape to olfactory receptor neurons," Marilyn Getchell says. "These cells express two of the three characteristic proteins also expressed by human olfactory neurons." The significance of their probing, as so often happens in science, was in what they did *not* find.

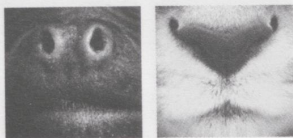
"There's a third molecule, called an olfactory marker protein, that's found almost exclusively in olfactory receptor neurons," Marilyn Getchell explains. "We did not find this protein. Nor did we see any nerves analogous to the olfactory nerve leaving the VNO. So we then hypothesized that signals from the pheromones were traveling up to the brain some other way."

This other pathway, she now believes, is the bloodstream. "If these cells in the VNO are neuroendocrine cells rather than neurons—and we believe this is a good possibility since markers for neuronal cells are also markers for neuroendocrine cells—then when a pheromone enters the nose and the VNO, it may interact with these cells and release a hormone into the bloodstream. The hormone targets the

Scientists who have studied pheromones know *something* is going on, and that something seems to be centered on how men and women relate to each other.



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brain, the hypothalamus in particular, which causes various bodily changes."

This theory would explain why there were measurable changes in the skin blood flow of subjects involved in the "pheromone tests" in Salt Lake City. Although they couldn't consciously detect the puffed-in pheromones, the subjects' autonomic nervous system was activated, as evidenced by changes in the galvanic skin response (a change in the electrical resistance of the skin). It is also significant that this skin response, as traditionally defined and understood, involves a change in a person's *emotional* state. This would perhaps explain in some significant way the good vibes in Berliner's lab over 30 years ago.

To date, Monti-Bloch has tested several dozen pheromones derived from the 20 natural isolates Berliner discovered in his human skin extracts. The tests have shown that the substances can evoke physiological reactions which include changes in heart rate, respiration, pupil size, and skin temperature. Responses vary from person to person, and some of the compounds affect only men or only women—as would be expected, given the role of pheromones in the rest of the animal kingdom.

Pheromones and Human Behavior

So, given the fact that human pheromones exist and noticeably alter our body chemistry, what scientific claims can be made about their influence on human behavior?

Perhaps the strongest case for a human pheromone involves menstrual synchrony. Psychologist Martha McClintock's 1970 study of women in a college dormitory showed convincingly that when women live together in close quarters for months at a time, their menstrual cycles begin to coincide. In this study, McClintock observed that many of the dormitory residents adopted the rhythms of a certain few women perhaps because they broadcast a chemical signal, a pheromone, that the other women heeded.

Skeptics have said women achieve menstrual synchrony because they eat, study, wash, vacation, and talk together—that shared stresses and joys regulate their cycles, not chemical messages. But a 1986 study by researchers at the Monell Chemical Senses Center and the University of Pennsylvania offered strong evidence of the power of human phero-

mones.

In this study 10 women with individual, unsynchronized cycles were exposed to underarm sweat from other women. The subjects were daubed under the nose every few days with the female sweat. After three months, the women's cycles began to coincide with sweat donors' cycles. The Monell researchers say this is strong evidence that a pheromone in sweat affects menstrual synchrony. (Other women, controls in the study, were daubed with alcohol and showed no significant change.)

If pheromones can, then, affect human behavior, how powerful are these invisible messengers? To what extent do they affect our relationships?

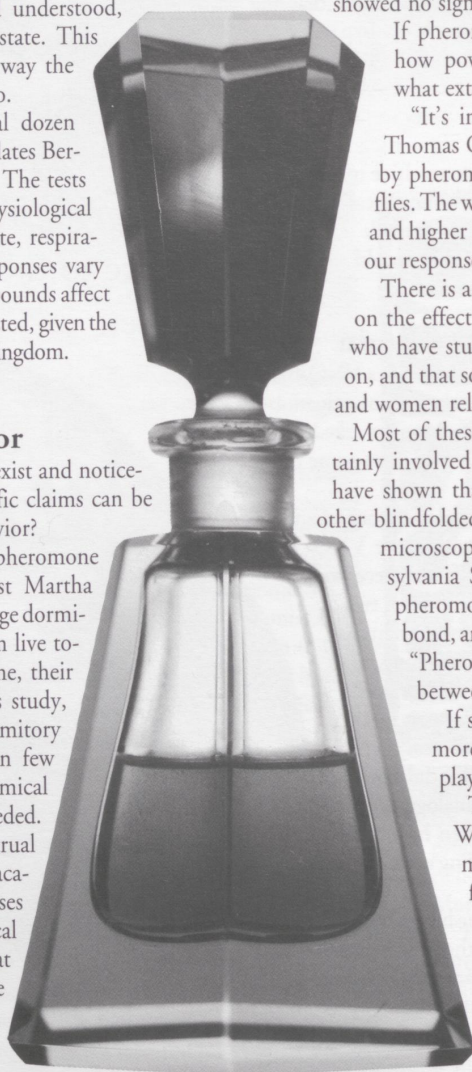
"It's important to keep all this in perspective," Thomas Getchell says. "Clearly we aren't as affected by pheromones as are rats and guinea pigs and fruit flies. The way we socialize is shaped more by experience and higher level thinking than it is in other animals, so our responses to chemical urgings aren't as inflexible."

There is anything but widespread agreement, in fact, on the effect of pheromones on humans. But scientists who have studied pheromones know *something* is going on, and that something seems to be centered on how men and women relate to each other.

Most of these researchers say this system is almost certainly involved in the recognition of individuals. Studies have shown that mothers and babies can recognize each other blindfolded, for example. David Moran, an electron microscopist and associate at the University of Pennsylvania Smell and Taste Center, says that human pheromones might be the mysterious link to this bond, and may also be used by adults seeking a mate. "Pheromones have to involve elemental bonding between males and females," Moran says.

If so, let's skip to the question that has gotten more than its world enough and time of media play: Are human pheromones an aphrodisiac?

The answer is yes, according to Charles Wysocki of the Monell Center. "Most mammals instinctively rub, kiss, lick, or bite facial features in greeting. Most human cultures do too. Western cultures kiss," Wysocki says, adding, "and Pacific Islanders rub noses." If the evidence for pigs, dogs, and horses extends to human beings, human breath and saliva are motherlodes of pheromones.





Sniffing Out a Winner in the Marketplace

Downwind of such scientific pronouncements, their nostrils and wallets flared, are the chief execs of the \$4.8 billion fragrance industry. These fragrance companies, struggling to spice up stagnant sales with something truly new, have spent millions, if not billions in the past few years, trying to isolate human pheromones. Brazen ads now appear regularly in fashion magazines, men's magazines, and on the World Wide Web. For example, a company operating out of Kissimmee, Florida, offers "The Scent," that "when unknowingly inhaled by any adult woman unblocks all restraints and fires up the raw animal sex drive in every woman" (\$19.95 per bottle).

Thomas Getchell smiles at such grandiose claims, pointing out that research into pheromones is in its infancy. At the same time, he does not discount the possibility that human pheromones added to perfume or cologne may have some positive effects on the wearer. And he has some direct experience in the matter: his one-time research colleague Berliner is now manufacturing commercial fragrances containing human pheromones.

"Along with being a scientist, Dr. Berliner has been an entrepreneur for years," says Getchell. "His corporation, Pherin, in Menlo Park, California, is producing a men's cologne and a woman's perfume, through a company called Erox. The fragrances contain pheromones under the trade name Realm. These are the only commercial fragrances on the market, as far as I know, which contain human pheromones."

Are these fragrances aphrodisiacs? Berliner is the first to respond with an unequivocal "No."

"The pheromones in Realm are intended only to enhance the well-being of the person wearing them," Berliner says. Pierre de Champfleury, Erox's president and chief executive, says the fragrances are intended to make the wearer "feel a sense of confident ease, feel more comfortable and more sensual. By feeling more confident, the wearer might feel more free to approach someone he or she might not otherwise approach."

And Getchell, again, has some firsthand knowledge of such fragrances. Not long ago, a company sent him "an esteem-enhancing fragrance," which he decided to try, he says, "purely as a scientific experiment, of course."

"I put on a liberal dose in the morning, came here to my office in the medical center, had a number of meetings, talked to several dozen people, had lunch, ran some errands, then went home. Just the usual day." Asked after a long silence, plenty of time for the punchline to fall, if the fragrance seemed to make any difference to the opposite sex, Getchell said, "None whatsoever."

The overall response to Berliner's work has been mixed. Michael Meredith, a professor at Florida State University, says the findings

Clive Jennings-White, a psychiatrist at the University of Utah, says that the vomeronasal organ is clearly a "sixth sense providing us with another window on the world."

are "very interesting and promising, but not conclusive." He believes some experimental holes need to be filled. Gordon Shepherd, a neuroanatomist at Yale University, says, "I see no reason to pooh-pooh the evidence. It raises valid and interesting questions." And Gary Beauchamp, director of the Monell Chemical Senses Center, adds, "Five years ago, most of us did not believe pheromones existed in humans. But now the field is coming to life."

Some researchers are more exuberant in their enthusiasm for this line of research. Clive Jennings-White, a psychiatrist at the University of Utah, says that the vomeronasal organ is clearly a "sixth sense providing us with another window on the world." Marilyn Getchell adds that this work "opens up a tremendously interesting area of human behavior for analysis at the cellular and molecular levels in terms of finding out why interactions and feelings between people develop."

The Getchells agree that as work continues in this relatively new research arena, we will certainly come to know more about how men and women speak the silent language of pheromones. ❖

ASSESSING STRESS: GETTING TO THE HEART OF THE MATTER



*John Henry was a steel-driving man and
he died with his hammer in his hand.*

—from the traditional folk song

John Henry's physical prowess is legendary, and his hard-driving style has given rise to a new psychological/physiological concept—"John Henryism."

John Henryism, a term coined by Sherman James, a researcher at the University of Michigan, is "a coping style characterized by a strong predisposition to confront daily psychosocial stressors in an active and effortful manner," says Lynda Brown Wright from behind a desk piled high with papers in her office in Dickey Hall. "This style incorporates aspects of the more familiar Type A personality with a commitment to hard work, a determination to achieve one's goals and a physical and mental tenacity," she adds.

Wright says that such high-effort coping in the face of overwhelming odds is thought to particularly characterize the plight of many African Americans, especially the working classes, who struggle to overcome the many barriers related to racism and general social and economic oppression.

Wright's passion for her work and her persistence in looking for ways to topple these barriers has helped break new ground in the area of psychosocial variables and their effect on cardiovascular health. On the basis of a proposed extension of this research, Wright has recently been awarded a prestigious National Institutes of Health Research Career Development Award. The \$539,000 NIH grant—one of only five in the country awarded in the study of the heart—will support Wright's research efforts over the next five years.

Wright's work will involve collecting data on positive (as well as negative) psychosocial forces in young peoples' lives—qualities such as religiosity and the impact of family and community ties. This data will be used to develop prevention and intervention programs. Having experienced the positive effects of church, family and community in her own life, Wright hopes to quantify their

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effects on a person's health and document the importance of these factors in helping young people achieve their potential.

Fitzgerald Bramwell, vice president for Research and Graduate Studies at UK, notes that "the award is a significant commitment on the part of federal agencies to support her research efforts and is recognition of her outstanding scholarly potential."

So how does a psychologist end up with an award to study physiological changes of the heart? Wright's initial research interest was in exploring what factors cause some children to succeed while others fail under the same social and economic conditions. Asked about how she became involved with a study of cardiovascular health, Wright still seems a little surprised herself: "I got into this area indirectly. My interest has always been with African-American children and the assessment of factors that impede or enhance their achievement in school and their self-esteem. I was particularly concerned with what was happening to African-American males—especially in the schools."

However, while completing her Ph.D. studies in counseling psychology at Texas A&M University, Wright did an internship at the Medical College of Georgia, where she met Frank Treiber, a researcher in the departments of pediatrics and psychiatry. Wright's interest in children coincided with aspects of work Treiber had begun on cardiovascular risk factors in youth, and she began to see how interrelated his work was to her own.

An assistant professor at the University of Georgia at that time, Wright received her first NIH grant, a supplement to Treiber's work, focusing on psychosocial risk factors in African-Americans' cardiovascular health. This preliminary study produced data which showed that children who have limited socioeconomic resources exhibit a high degree of John Henryism and are likely to also have higher than expected changes in blood pressure. Thus, at an early age, the cardiovascular systems of these children exhibit some negative effects.

More African Americans die from the

effects of high blood pressure (hypertension) than whites, and among African Americans those from lower socioeconomic backgrounds have a noticeably higher prevalence of physical health problems—especially hypertension. According to a 1994 article in *The Lancet* ("Ethnic Aspects of Hypertension"), "about a third of the excess mortality of U.S. blacks over non-blacks can be explained by their greater burden of hypertension."

Although diet and lifestyle have long been known to contribute to the prevalence of hypertension among African Americans (especially those from lower socioeconomic backgrounds), "recent findings suggest that environmental stress-related factors may also play a significant role" in the difference in prevalence rates of hypertension experienced by African Americans of different socioeconomic backgrounds, according to *The Lancet* article.

Treiber points out that Wright's work is unique in that she is looking at African Americans from poor socioeconomic backgrounds as opposed to African Americans from the middle socioeconomic strata to determine the difference in the stressors this first group encounters daily, as well as to see how different coping styles affect a propensity for early onset of hypertension. Wright's research will try to quantify this disparity in the hypertension rate between blacks of different socioeconomic classes and pinpoint the psychosocial variables which may cause this difference.

Wright's current NIH grant has targeted environmental stress-related problems associated with racism and discrimination as well as the crime, violence and crowded living conditions which are the norm for many young African Americans from lower socioeconomic backgrounds. Wright notes that these elements are "all factors that are special concerns of lower socioeconomic African Americans and have been positively associated with increased perceived emotional/psychological stress among African-American adults." In this study, Wright will be looking for the antecedents of hypertension in the African-American young

Low socioeconomic
students, both white and
African American, who
exhibit the John Henry
coping style, tend
to have a greater
incidence of hypertension.

CONTINUED ON PAGE 10

people prior to their having developed cardiovascular disease or damage.

The significance of Wright's work is bolstered by data from a group of young people in Georgia who have been involved in a longitudinal study of their cardiovascular health since 1989. These 250 youths, now 13 to 18 years old, form a stable pool from which to draw conclusions about long-term effects of the combination of coping styles, psychosocial variables, and economic backgrounds. The group is evenly divided between African Americans and whites, males and females, selected on the basis of having a family history of hypertension. All of them had normal blood pressure at the outset of the study. Though Wright's NIH grant targets hypertension rates in black students, her findings can potentially be applied to students of all races. For example, her preliminary findings revealed that the coping style of John Henryism, when added with the effects of a lower socioeconomic background, yields greater statistically significant variations in the rate

of cardiovascular disease than any other indicator—including race. In other words, low socioeconomic students, both white and African American, who exhibit the John Henry coping style tend to have a greater incidence of hypertension.

Researchers normally use physical stressors such as treadmill exercise, putting a subject's arm in a bucket of ice water, or applying cold packs to the forehead to stimulate the type of cardiovascular response which psychological stress might bring on. Wright's study will combine these traditionally used physical stressors with the Sensitive Events Questionnaire [SEQ], a new research approach she is pioneering. This questionnaire is already being used to gather data on physiological responses to incidents of racism and discrimination which the African-American adolescents in the study have experienced. The SEQ interviewer leads subjects to recall these events and articulate the emotions the events aroused. Cardiovascular responses are measured before, during, and after the inter-

Wright says that high-effort coping in the face of overwhelming odds is thought to particularly characterize the plight of many African Americans, especially the working classes.

view. Wright enjoys this aspect of her research because of the chance to interact with students, and discover and discuss the stressors in their lives.

Carol Bunch Williams, Wright's research assistant in the Department of Educational and Counseling Psychology, notes that Wright's presence is "great for her students. The fact that she had an ongoing research project before coming here means that we can learn about research from her. It's difficult to do that without one-on-one, hands-on experience." Williams and other graduate students tabulate various data sets collected on the study group in Georgia and run additional analyses upon it, taking raw data and turning it into publishable articles.

Wright's interest in the effects of environmental stressors arises from her life experiences and from what Dean John Harris, Scholar in Residence for African American



LYNDA BROWN WRIGHT WAS RECENTLY AWARDED A \$539,000 GRANT FROM THE NATIONAL INSTITUTES OF HEALTH TO SUPPORT HER RESEARCH INTO PSYCHOSOCIAL VARIABLES AND THEIR EFFECT ON CARDIOVASCULAR HEALTH.

Studies in the UK College of Education and the former dean of the college, calls "a felt moral obligation to look at the basis of inequities in society and conduct research which seeks to eliminate those inequities in areas such as schooling and achievement, with particular emphasis on African Americans."

When asked about familial influences, Wright says, "In addition to the tremendous support of my mother and dad, my extended family was important." She was particularly inspired by her grandfather, Joseph Madison Martin Sr., a teacher and principal for 43 years. He educated the African-American children and adult sharecroppers in Louisiana using cast-off textbooks from white schools. Wright speaks with pride of how he and her grandmother bought and ran the first school bus for African Americans in the area. Meanwhile, they raised seven children—all of whom went to college. Giving homage to her grandfather, Wright says, "A part of African tradition is to invite your ancestry in. I get a lot of strength from him. He was such an active and vibrant-minded person, a wise person."

"Not only was my grandfather an important influence, but my mother Annie was as well," Wright says. She says that even though her mother could have walked to Louisiana Tech, she was denied access to the graduate program there because she was an African American. Wright's parents moved the family to a new town rather than be kept from attaining a goal. A formative memory from Wright's childhood is of being packed up along with her two sisters and riding all night with her father to Detroit, where her mother had been admitted to the master's program at Wayne State.

Wright herself holds a bachelor's degree in psychology from Grambling State College, and two degrees from the State University of New York at Albany (a master's degree in educational psychology and an education specialist degree in school psy-

More African Americans die from the effects of high blood pressure (hypertension) than whites, and among African Americans those from lower socioeconomic backgrounds have a noticeably higher prevalence of physical health problems—especially hypertension.

chology), in addition to her Ph.D. from Texas A&M University.

She chose to become a psychologist in part because of her experiences in the late 1960s when she was one of seven African-American students who integrated a middle school in her native Louisiana. "I started reading Dr. Martin Luther King Jr., when I was 10 or 11. By the time I was 12, I was ready to follow in his footsteps and to forge ahead." When King was assassinated during her eighth-grade year, she and the other African-American students were forced to stay home for a week to avoid the taunts of their fellow students. Wright's experience of racism during this time drove her to want to understand why people act the way they do. She credits King's example with making her a non-violent activist in high school who worked to reduce the racial tensions among people.

Wright continues to draw strength from the examples of King and her grandfather. "Whenever I get down or think I can't go any further, I think of my granddad. Between him and Dr. Martin Luther King, I got a lot of my inspiration to do what I have done."

At UK, Wright speaks to campus minority groups about her research on John Henryism and its physiological effects. She articulates the environmental stress students are likely to encounter in daily life situations. Making counselors, teachers, and students themselves aware of the stressors and their possible physiological effects is an important step, she says. Wright comments that counselors and teachers who are aware of racial and other environmental stressors can help students deal with issues straight on rather than internalizing them. ■

W R I T T E N B Y
H E I D I B R I G H T P A R A L E S
P H O T O S B Y L E E T H O M A S

First Amendment:

"Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the government for a redress of grievances."

As winter winds blew across most of the country in November, a different kind of chill may have descended on some U.S. newspaper editors and publishers, as politicians running for office threatened them with libel suits. Two researchers at the University of Kentucky, who are researching this "chilling effect," have found that some editors would not print certain stories or information because they had been threatened or actually been sued for libel.

"We developed a 'chilling index' of items to find out whether threatened or actual libel suits had an effect on editors," says Roy Moore, one of the co-founders of the University of Kentucky's First Amendment Center and associate dean for Graduate Studies in the College of Communications and Information Studies. Overall, the researchers found that the chilling effect was most severe in Kentucky for small or family-owned newspapers. "I think it's because they don't always have the resources to fight back," Moore says.

Elizabeth Hansen, a UK doctoral student who developed the pilot research project in 1988, says the cost of defending a newspaper extends beyond the financial burden. "There are the lawyer's fees, the

lost time and the emotional toll. It puts an incredible strain on editors and their families," she says.

Homer Marcum, who was editor and publisher of the *Martin Countian* from 1975 until he sold it in 1989, expresses it well: "I've never lost a libel suit, but danged if I can afford to keep winning," he told the *Columbia Journalism Review* in 1985. He was sued seven times by a former county attorney who also happened to be the publisher of a competing newspaper.

Hansen, who has been teaching community journalism and media law at Eastern Kentucky University since 1987, recognized there wasn't much information on how libel affected community newspapers such as the *Martin Countian*. So she began working with Moore to develop a written survey about how actual and threatened libel suits affected small newspapers in Kentucky. Stories that could lead to libel suits included accusations of crimes, along with stories about the government, people or corporations. These stories could possibly contain false information. Moore defines libel as "false and defamatory information that is published and subjects a person or other entity to public hatred, contempt or ridicule."

Moore explains there are three possible outcomes beyond what may happen in the courtroom for threatened or actual libel lawsuits: —A negative or chilling effect on editors, who become afraid of lawsuits and therefore don't print certain stories or some information;

The Big Chill

Article the second... No law, varying the compensation for the services of the Senators and Representatives, shall take effect, until an election of Representatives.

Article the third... Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the government for a redress of grievances.

Article the fourth... A well regulated militia, being necessary to the security of a free state, the right of the people to keep and bear arms, shall not be infringed.

Overall, the researchers found that the chilling effect was most severe in Kentucky for small or family-owned newspapers.

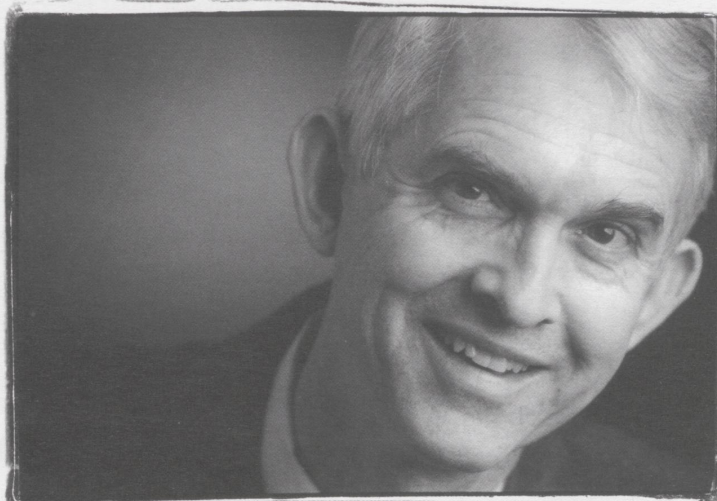
- A positive effect, making journalists and editors more careful and more accurate; or
- No effect on the editors.

In this joint project between UK and ECU, Hansen mailed the survey to 167 state newspapers with circulations of less than 50,000. She received 69 responses, a 41 percent response rate.

"Respondents who had been threatened just once had a significantly higher chilling effect score than those who had never been threatened," says Moore. "If our study is an accurate indication, even one threatened suit is sufficient to chill some community newspapers."

While editors were not directly asked if they had ever withheld stories because of threatened libel suits, they were asked to agree or disagree with this statement: "Newspapers the size of mine sometimes withhold accurate, important stories because of fear they will be sued for libel if the story is published." Among respondents, 21.7 percent agreed, 76.8 percent disagreed and 1.5 percent were undecided.

David Cazalet Jr., editor and publisher of the *Russell Springs Times Journal*, says libel suits have influenced the way he covers stories about a group of people who are currently suing his newspaper. "We are trying to avoid further battles with them. It colors everything that we do related to those people because we know what the outcome will be," Cazalet says. "I would have to say that there have been stories we've covered much differently, haven't gone after as aggressively or maybe not covered at all because of our responsibilities to our employees and ourselves."



"FIRST AMENDMENT LAW IS SOMETHING I LIVE AND BREATHE. IF WE DIDN'T HAVE THE FIRST AMENDMENT, OUR LIVES WOULDN'T BE NEARLY AS RICH," MOORE SAYS.

Moore comments, "I think there are stories that probably do not get run, but pinning that down is very difficult to do. Journalists just don't like to think they would do that. My instinct is yes, it does go on, but I don't think it's on a large scale."

When editors were asked if "the possibility of being sued for libel has a chilling effect on a newspaper the size of mine," 45.6 percent agreed, 42.6 percent disagreed, and 11.8 percent were undecided.

Of the respondents, 70 percent said they had been threatened with a suit at least once in the previous five years. Nine papers were actually sued a total of 13 times in the past five years. While threatened and actual libel suits had a chilling effect on some newspapers, some editors continued to publish stories that could result in lawsuits.

Russ Powell, editor of *The Daily Independent* in Ashland, says, "I don't feel like any threats of litigation or any litigation we're involved in now or in the past have made any difference in what we report or how we go about reporting. We operate from the premise that we always want to print stories that are true, accurate reflections of the facts." Powell admits his newspaper, like newspapers across the state, may hold publication of sensitive stories for a few weeks to give reporters time to go back to verify facts. He says holding a story is different from never publishing it.

One Kentucky weekly newspaper publisher and editor wrote, "Certainly

CONTINUED ON PAGE 14

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Article the third... Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of assembly, and to petition the government for a redress of grievances.
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Some editors would not print certain stories or information because they had been threat- ened or actually been sued for libel.

the possibility of a lawsuit inspires a healthy fear in many of us. We exercise great caution to check and double-check police records. We file and keep any notes we think could be used at a later date and take great care not to misquote and frequently double-check information if the story deals with a sensitive topic. However, if we are certain of our sources and information, we print regardless of threats. If we aren't so sure, we don't print."

Moore agrees: "Most editors and publishers thought their newspapers improved as a result of a threatened or actual lawsuit."

The study also showed that this held especially true for respondents who had attended libel seminars. These seminars tended to give respondents greater confidence about their decisions to run certain stories.

About 62 percent of the newspapers carried libel insurance, yet ironically those with insurance were more likely to be chilled by a threat of a lawsuit than those who didn't have insurance. Hansen and Moore suggest this is probably due to the resulting rise in insurance premiums if the paper is sued.

The researchers' overall conclusion to the study was that larger newspapers owned by corporations were more likely to be sued, but the chilling effect was greater for the smaller, privately owned papers.

Moore and Hansen expanded their research in 1992 by taking the same survey to the national level with the assistance of UK's Survey Research Center. Moore received a \$3,000 UK Research Committee Grant in 1992 to do a telephone survey of daily newspaper editors and publishers.

"A random national sample had never been done before on newspaper editors and publishers on this issue," Moore says. He was surprised by the level of response from the newspaper editors and publishers, and by their interest in the topic. "The survey had one of the highest response rates of any project conducted by the center," Moore says. "The editors were so interested in the topic that, without exception, if they missed the call, they wanted you to call them back. Some of the editors talked on and on about the topic." A randomly selected group of 354 newspaper editors and publishers were contacted by telephone, and 305 agreed to participate in the study.

The survey revealed that libel suits are a major concern for newspapers. Eighty-five percent of respondents had been threatened with a suit, while 15 percent had not. About a third of the respondents had actually been sued for libel, while two-thirds had not been sued.

Seven out of 10 respondents reported that their paper had published a story when they knew in advance they were risking a libel suit, says Hansen. Of those who published such a story, 17.8 percent were actually sued, giving editors good reason to be chilled by threats.

"If a newspaper had been threatened, the editor was significantly more likely to be chilled," Hansen adds. "Also, those sued were significantly more likely to be chilled than those who had not been sued."

When asked whether they should be more concerned about libel now than five years ago, 92.5 percent of the respondents disagreed, while only 4.6 percent agreed. About 73 percent



ELIZABETH HANSEN SAYS THE COST OF DEFENDING A NEWSPAPER IN A LIBEL SUIT EXTENDS BEYOND THE FINANCIAL BURDEN: "IN ADDITION TO THE LAWYER'S FEES, THERE IS LOST TIME AND THE EMOTIONAL TOLL. IT PUTS AN INCREDIBLE STRAIN ON EDITORS AND THEIR FAMILIES."

Article the second... No law, varying the compensation for the services of the Senators and Representatives, shall take effect, until an election of Representatives.

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Article the fourth... All legislative powers herein granted shall be vested in a Congress of the United States, which shall consist of a Senate and House of Representatives.

“I’ve never
lost a libel suit,
but danged
if I can
afford to keep
winning.”

—Homer Marcum

saw libel as a daily concern. About 66 percent of the respondents carried libel insurance, 17 percent did not and, surprisingly, Hansen notes, 17 percent of respondents did not even know if their paper carried libel insurance.

Moore has been asked to serve as an expert witness in libel cases from Louisiana to Minnesota. He is eminently qualified to testify not only because of his research, but also because his background combines degrees in both mass communications (a doctorate in 1974) and law (a juris doctor degree in 1986).

In 1994 he testified at trial on behalf of the *Russell Springs Times Journal* in a suit involving three editorials the newspaper had run about the county judge executive. He had lost his re-election bid in the primaries, and blamed the loss on editorials the paper had printed.

Moore was called to testify that the editors had acted reasonably in their publication of information about the plaintiff. He said they had taken reasonable care and precaution in publishing the editorials and that they were the kind of information that served the public interest. He called attention to the fact that the pieces were editorials, which are supposed to be opinions. “Criticism is expected of public officials,” he says. “Public figures should be able to take that kind of criticism.”

Moore also believes newspapers have the right to publish false information under certain circumstances, and that’s what the U.S. Supreme Court has decided. “There is no way you can guarantee what you write is the absolute truth,” he explains. “It is a question of when you have protection. If you *know* something is false or you have serious doubts about it and you publish it anyway, and you harm someone’s reputation, then you have no protection.”

The jury in the *Russell Springs Times Journal* case disagreed with Moore and decided in favor of the county judge executive, to the tune of \$1 million. The newspaper appealed the decision to the Kentucky Court of Appeals, which overturned the decision in 1995. This kind of result is rather typical of libel cases, Moore explains. Newspapers tend to lose when a jury is making the decision, but tend to win when the decision is appealed.

“This is an example of where the courts are far more willing to give protection to the press than the general public would give the press,” Moore says. “It takes the courts to define the limits of the First Amendment, and they define it more narrowly than the general

public. I agree with the courts that there are certain limits, but we need to make sure there are very few limits, and that they are strongly justified.”

Moore says he believes the reason the general public is not willing to defend the freedom of the press as strongly as the courts is because journalists haven’t done a very good job of selling the First Amendment. “The First Amendment comes up as a defense instead of a right and a responsibility,” he says. “It’s good we have it as a shield, but we need to demonstrate the importance of the First Amendment. Freedom of speech is extremely important for the individual, but sometimes I think we take the First Amendment for granted.”

Moore adds that this Amendment also protects claims made by politicians and other public figures, even when those claims are false. They are protected against libel suits unless the plaintiff can prove that the claims were made with actual malice—when the defendant knew the claims were false or had serious doubts about whether

they were false.

“In the eyes of the courts, it is better to have robust debate to keep people better informed,” Moore explains. “It’s known as the free marketplace of ideas. If you let the marketplace play itself out, the truth will eventually win. It may take awhile, and some people may suffer, but this is far better than government control of the process. If politicians must watch what they say, they won’t say much.”

Moore believes strongly in free speech and freedom of the press. “First Amendment law is something I live and breathe,” he says. “For me, it’s so important to the quality of life in our society. If we didn’t have the First Amendment, our lives wouldn’t be nearly as rich because a lot of stories that have been printed would never have been published without this constitutional protection.”

Moore brings his love for the First Amendment and his research on the topic into the classroom, teaching mass media law and writing textbooks. His first book, *Mass Communication Law and Ethics*, was published in 1994 and is used at colleges and universities around the country. He is currently working on two more books. *Advertising Law and Ethics*, written with two co-authors, is scheduled for publication in 1997, and *Mass Communication Law in Kentucky* is his and Hansen’s latest work in progress.

As these projects wind down, Moore will turn his attention to research on “intellectual property issues,” especially how copyright law is affecting journalism. “The hot area of media law in the future is going to be copyright,” he says. ■

HONORABLE MENTION

COMPILED AND EDITED
BY SUSAN HODGETTS STEMPEL

IMPACT AND ACHIEVEMENTS OF UK GRADUATE PROGRAM ALUMNI



KAREN LONG (FORMERLY RACHAEL),

M.S.N., C.F.N.P., Nursing, '94, is director of research at Ridgeview Research Center, Chanhassen, Minnesota. The center conducts clinical drug trials, focusing on areas of women's health, infectious diseases and dermatology. Long heads marketing efforts to pharmaceutical companies, oversees patient recruitment and personally evaluates patient drug reactions. "The nurse practitioner training I received at UK was solid. The program encourages people to build leadership and create their own businesses with a high skill level," Long says.

LIZA G. BERZINS,

M.A., '79, Ph.D., Clinical Psychology, '82, resides in West Hartford, Connecticut, where she has a private practice in clinical psychology and also serves as founder and president of PLEASE (Promoting Legislation and Education About Self-Esteem). In collaboration with Connecticut Attorney General Richard Blumenthal, Berzins initiated legislation which made Connecticut the first state in the United States to regulate claims made by diet companies. From 1987 to 1993 she served as the director of the Eating Disorders Program at the Institute of Living in Hartford. Berzins shares her private practice with her husband, Juris Berzins, who was a professor of psychology at UK from 1965 to 1987. Liza was director of psychological services at Charter Ridge Hospital in Lexington until the couple moved to Connecticut. They have two daughters, Laila, age 12, and Melanie, age 11. The Berzins can be reached on the internet at <pleaseinc@aol.com>.



BERZINS CURRENTLY HAS A PRIVATE PRACTICE IN CLINICAL PSYCHOLOGY IN WEST HARTFORD, CONNECTICUT.

JACQUE PARSLEY,

M.F.A., Fine Arts, '94, has served as curator for over 100 exhibits since 1980. At UK she studied fiber and mixed-media under Arturo Alonso Sandoval. She is gallery director for the Bank One Gallery in Memphis, Tennessee. Her art has been included in the "World's Women On-line" exhibit presented at the United Nation's Fourth World Conference in Beijing, China, and the National Museum of Women in the Arts in Washington, D.C. Her work can be seen on the internet at <<http://www.asu.edu/wwol>>. Parsley's art has also been pub-

lished in many magazines and books, including *American Craft Magazine*, *Fiberarts Magazine*, *Surface Design*, and *Who's Who in American Art*. Her work is also in the collection of the Owensboro Museum of Fine Art, the Evansville Museum of Fine Arts, Hilliard Lyons in Louisville, and Lew Magram in New York City. Parsley and her husband, Thomas Henrion, live with their two daughters and son in Louisville. She may be reached on the internet at <Jpcollage@aol.com>.

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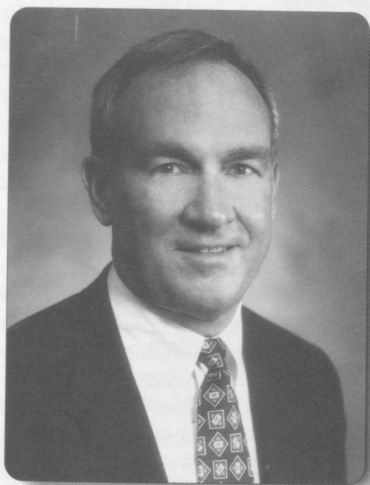
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HONORABLE
MENTION

BECKY HARPER LAVEY,

M.S.W., Social Work, '92, is a social worker in Project Transition at Bryan Station High School in Lexington, Kentucky. In her current role, LaVey works to help improve the students' grades and attendance and reduce their absences and suspensions. The classroom teacher and LaVey work in tandem to help the students. The program in Lexington is gaining attention among educators. LaVey has made a statewide presentation at the "At Risk" Conference in Bowling Green, Kentucky, and has been asked to make a presentation to the national Dropout Prevention Conference in March of 1997.



JAMES STUCKERT,

B.S., Mechanical Engineering, '60, M.S. in Business Administration, '61, has recently been named chairman, president and chief executive officer of the Louisville-based J.J.B. Hilliard, W.L. Lyons Inc. Hilliard Lyons is the area's largest stock-brokerage company, according to a May 1995 listing.

ANNE M. BUCK,

M.S.L.S., School of Library and Information Science, '77, is originally from Charleston, West Virginia. After graduating from Wellesley College in 1961 with a degree in geology, she began her studies at UK. Currently, she is university librarian for the California Institute of Technology in Pasadena, California. This year she was recognized with a Distinguished Alumni Award from UK. She is listed in *Who's Who in America* and has served as vice president and a member of the board of directors of the Engineering Information Foundation, a member of the Highsmith Press Editorial Advisory Board and treasurer of the American Society for Information Science. Buck has two grown children and two grandchildren.

SHIRLEY C. BROWNING,

B.S., Commerce, '64, M.S., Agricultural Economics, '67, went on to continue his studies at the University of Connecticut, receiving a Ph.D. in 1971. Browning was originally from Flemingsburg, Kentucky, but now lives in Swannanoa, North Carolina, and is a professor of economics and associate vice chancellor for Academic Affairs at the University of North Carolina in Asheville. Browning is married to Carole Gill Browning, who graduated from the UK College of Education in 1965. They have a son, Robert, who is a historian in West Town, Pennsylvania, and a daughter, Elizabeth, who is a modern dancer and choreographer in Tempe, Arizona. Browning also continues to co-own Browning Orchard in Wallingford, Kentucky, with his brother, Frank Browning. The family has owned the orchard since the 1890s.



MARTIN IS NATIONAL VICE PRESIDENT OF MEDICAL HAIR RESTORATION, BASED IN MAITLAND, FLORIDA.

NANCY P. MARTIN,

B.A., History/English, '71, M.L.S., Library Science, '80, is national vice president of Medical Hair Restoration, whose corporate offices are in Maitland, Florida. The company is the second largest surgical hair transplantation group in the United States. Prior to her present position, she managed Cambe Geological Data Service in Houston, where she maintained geological statistics and seismic data on one million oil and gas wells. Martin has published extensively on hair loss in professional magazines and is also a member of the Adult Literacy Council in Winter Park, Florida, where she is a tutor for the GROWS Program for Hispanic Literacy.

First African-American UK Law School Graduate Back Home in Kentucky

When Ollen Hinnant walked off the University of Kentucky campus in May of 1955 as the first African-American graduate from the UK College of Law, he had no clear idea where his degree would take him. What he did know was that once he decided on a direction and a professional focus, nothing was going to stop him from succeeding.

"At UK in the early '50s, a trend began that would follow me through my professional life," Hinnant says. "I was always a first at something—first black member of the legal fraternity here [Phi Delta Phi], the first black officer of this fraternity, and the first black graduate from the UK College of Law." A simple desire fueled Hinnant's series of firsts: the desire to be involved. "I always wanted to be a part of what was going on on campus. Along with joining a fraternity, I took part in the student bar association, the moot court club, and even played intramural football."

After graduation and a two-year stint in the army working with computers that guided missiles ("computers then were big as a bus," Hinnant recalls), he landed a job at State Farm Insurance in Montclair, New Jersey—the first black lawyer in State Farm's history.

"State Farm sent me to its national negotiation school in Bloomington, Illinois," says Hinnant, "to become a knowledgeable investigator and negotiator. I finished first in the class." Hinnant says that this was an important development in his career, since he could apply various theories of law he'd learned at UK to the specific facts of a case.

"Oh, those years at State Farm were really good ones," Hinnant says. "I had a good salary, a company car, and two expense accounts. I also worked hard to have the highest record in the Eastern part of the U.S. in settling cases for State Farm."

These were good years, too, Hinnant adds, because he and his former wife Ella were also raising a daughter, Denise, and a

board of Prudential. "I handled cases in court, supervised litigation, as well as regulatory and non-regulatory matters handled by company lawyers, and made recommendations," Hinnant explains. At Prudential, Hinnant racked up another series of firsts. "I became the first black general counsel of Prudential, the first black chair of the American Bar

Association Health Insurance Committee, and the first black to represent the ABA to the American Medical Association," Hinnant says.

His growing reputation and expertise led him to represent Prudential in a number of international business meetings and also took him, on several occasions, to the White House.

In October of 1979 Prudential's chairman of the board was asked by the Carter White House to make a "short list" of candidates for the position of Secretary of Commerce. The chairman delegated this responsibility to Hinnant, who immediately flew to Washington.

"President Carter had appointed a woman from IBM, but she had withdrawn her name," Hinnant says. "So I was given the charge of coming up with a list of 25 other women candidates by the end of the day." Within the following week, Carter picked Juanita Morris Kreps from this list—the candidate who had been Hinnant's top choice. Hinnant subsequently met Carter, who invited him to a private party at the White House.

Carter wasn't the first president Hinnant had met—he was a guest at the White House under Presidents Nixon



HINNANT (THIRD FROM LEFT) WAS THE CO-HEAD NEGOTIATOR FOR PRUDENTIAL INSURANCE WHEN THE COMPANY BUILT AND LEASED A STORE TO BLOOMINGDALE'S. THIS \$200 MILLION CLOSING TOOK PLACE IN THE BOARD ROOM OF PRUDENTIAL IN 1968.

newborn baby, Gregory. Their third child, Cheryl, was born in 1964. "Now, two of my children are in the computer field," Hinnant says, "and Denise is working on her master's of fine arts degree and plans to go on for her Ph.D. at the University of Louisville."

After spending, he says, 1,000 hours preparing for the initial job interview, Hinnant was hired by the Prudential Insurance Company, where he climbed in the ranks to become assistant general counsel in the International Law Department and special assistant to the chairman of the

and Ford as well. Ford appointed him a judge on the Selective Service Board and he was later appointed by President Reagan as a United States Commissioner to UNESCO in the United Nations and to a Presidential Task Force.

Asked where he got his strong work ethic and his tenacious drive, Hinnant doesn't miss a beat. "My mother was a bright, talented artist, and she simply refused to fail. The story goes that after she graduated from Dunbar High here in the '20s, she announced at dinner that she was going to college. Everybody at the table just laughed at her and said, 'Nobody's ever gone to college in this family. Why do you think you can go?' My mother said, 'If everybody here will just give me a nickel, I'll buy a one-way ticket to Xenia, Ohio, and go to Wilberforce College.' She showed up there a few weeks later and knocked on the president's door. Four years after that she came back with a degree in art."

Hinnant's father also had an important influence on him. "My father was a hard-working business broker," Hinnant explains. "He bought and sold businesses. And he liked me to go along with him on his business trips."

Hinnant left Prudential in 1983 to become associated with Delson and Gordon, an international law firm in New York City. More recently, in 1991, he led a team of five negotiators to Japan on behalf of the Roanoke Valley Cellular Telephone Company, which owns the cellular telephone license in the entire Gulf of Mexico. Hinnant was brought in to settle a \$30 million claim and was successful in meeting company objectives.

"I guess you could say I've lived two or three lives in my sixty-some



HINNANT MET DR. MARTIN LUTHER KING JR. WHEN KING SPOKE IN MONTCLAIR, NEW JERSEY, IN THE MID 1960S.

years," Hinnant says. "I think what a tragedy it would have been if I hadn't been admitted to and graduated from the law school here, since it helped me get involved in so many things." He still spends some time these days at the UK law school, as a member of the diversity committee and member of a College of Law advisory group. He also works with the UK recognition planning committee which is currently organizing a celebration of 50 years of African Americans at UK.

Asked about the major changes on the UK campus since his time here as a student, Hinnant says the most noticeable change is the number of African-American faculty, administrators and students. He voices some disappointment that so many African-American students at UK seem to "keep to themselves." He would like to see them involved in the various activities of their colleges and throughout the university.

"They must take the attitude that this is their university," Hinnant says.

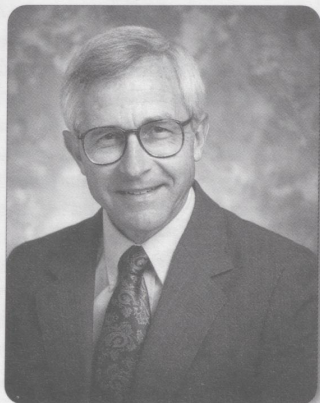
"I think one reason for this lack of involvement is their history isn't readily evident on campus," Hinnant says. "What I believe would help the situation is to create and display on campus various types of art work that reflect a more diverse society." Hinnant mentions the possibility of a mural of the court battle waged in the '50s that resulted in African Americans being admitted to UK. "This mural could be on permanent display in the College of Law, or maybe it could be hung in a visible place on the campus."

One theme Hinnant returns to in discussions of his long and varied career is the importance of diversity. "The 1996 UK basketball team is one example of what can be achieved by diversity," says Hinnant; "UK's Centers of Excellence are other examples."

"Whatever the situation, I believe in the idea of 'best person, best team'—the best person chosen for a particular job, which—if you want excellence—has to be in the context of diversity. Blacks and women now run Fortune 500 companies, are generals in the armed forces, and sit on the U.S. Supreme Court. Anyone today can see that the old myths about blacks and women simply don't hold water."

—Jeff Worley

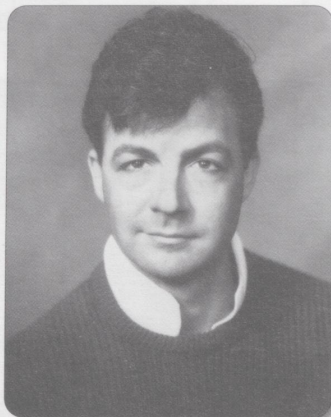
HONORABLE
MENTION



BATES IS PART OF A RESEARCH TEAM AT OAK RIDGE NATIONAL LABORATORY DEVELOPING NEW SUPER-THIN MICRO-BATTERIES.

JOHN BATES,

B.A., Chemistry, '64. Ph.D., Chemistry, '68, is heading a research team at the Oak Ridge National Laboratory. His group is investigating and developing a new realm of super-thin, rechargeable lithium batteries. "This is really the first viable battery technology that can be made on such a small scale," said Bates in a *Knoxville News Sentinel* article. "These batteries, because you can recharge them thousands and thousands of times, only need to be large enough to satisfy requirements over some minimum time period." Bates says that he and his research team have developed battery components that are "half as thick as Saran Wrap." Potential uses for the micro-batteries seem to be almost unlimited. Before he got involved with thin-film batteries in the early 1980s, he was doing research on radiation damage in solids.



CHICUREL IS A PROFESSOR OF MUSICAL THEATER AT NORTHERN KENTUCKY UNIVERSITY.

STEVEN R. CHICUREL,

D.M.A., School of Music, '89, is a professor of musical theatre at Northern Kentucky University. Before he came to UK, he earned a bachelor's degree in music in 1977 at Mars Hill College, and two master's degrees in music—one from The Peabody Conservatory in 1980 and the other from Johns Hopkins University, also in 1980. Chicurel reports that "after a career as a performer in 11 countries, I have studied voice science. Since 1988 I have been involved in research in physiology, acoustics, and physics, and now have a 'second career' as an educator in that area." Chicurel has traveled internationally several times to present his research findings to various groups.



TERRI LOUISE LACY,

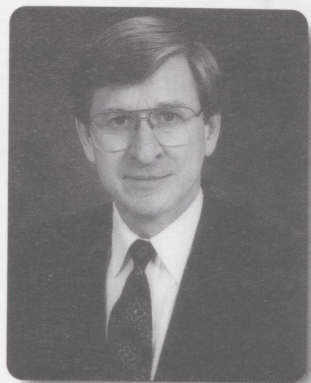
B.A., English, '69, M.A., Education, '72, is reading consultant at Bloom School District in Chicago Heights, Illinois, as well as the English chair for the Illinois School Improvement Plan in the high school where she teaches. Lacy also is the director of a district swim program. She says she saves summers for "research and reflection."

RHONDA JEAN RICE PREBECK,

M.S., Nursing, '92, is an oncology clinical nurse specialist at the Regional Medical Center in Madisonville, Kentucky. Although she grew up in Ashland, Kentucky, Prebeck has lived in nine states since 1967. Part of that time she was a staff nurse at the UK Markey Cancer Center (1987-89) and was named "Nurse of the Year" there in April 1989. She served as research nurse coordinator in the UK Department of Medicine under John Thompson between 1983 and 1989. During her studies at UK, she was a recipient of the Betty M. Holliday and Eunice S. Milton Memorial Scholarship. Prebeck is the mother of a karate instructor in Louisville (Wes) and a daughter (Nicole), who is a sophomore at Madisonville North Hopkins High School. Some of Prebeck's recent accomplishments include her successful completion of the Advance Oncology Certification Exam and her promotion to captain in the Army Reserve Nurse Corps.

HONORABLE
MENTION

ALUMNI OF ANY OF UK'S GRADUATE PROGRAMS ARE INVITED TO COMPLETE THE INFORMATION FORM ON PAGES 17-18. WE WILL SHARE AS MANY OF YOUR RESPONSES AS POSSIBLE IN FUTURE ISSUES OF ODYSSEY.



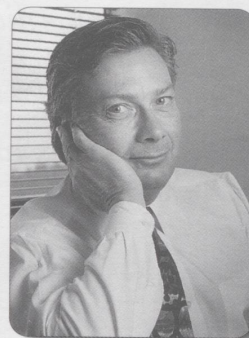
LAST SPRING GILBERTSON BECAME PROVOST OF THE UNIVERSITY OF THE PACIFIC.

PHILIP N. GILBERTSON, *Ph.D., English, '71*, assumed the post of provost of the University of the Pacific on March 15th of this year. Gilbertson, 52, has been a dean and professor of English at Valparaiso University in Indiana since 1989. A native of Crosby, North Dakota, Gilbertson is married to Carole Peterson Gilbertson, a music educator and flutist. The couple have two children—Erika, 25, and Nathan, 22.

VICTOR PRYOR GAINES SR., *M.A., Education Counseling, '69, Ed.S., Education Counseling, '77, Ed.D., Higher Education and Administration, '81*, is now associate vice president for student affairs at Morris Brown College in Atlanta, Georgia. Originally from Staunton, Virginia, Gaines attended Kentucky State University as an undergraduate, studying history and government. In 1974, Gaines served as special assistant to Otis Singletary, then president of UK.

CATHERINE C. (KATIE) THOMPSON (FORMERLY BAZZELL), *M.S., Chemical Engineering, '80*, studied for her master's degree at UK under Leonard Peters. She now is technical services superintendent for the Tennessee Valley Authority Shawnee Power Plant in Paducah, Kentucky. Originally from Benton, Kentucky, Thompson was the first female technical services superintendent at a TVA fossil plant. As the daughter of a TVA plant manager, Thompson was introduced to the organization as a child. She says her daughter, Amanda, at five years of age "already had an engineer's mind, so she may be destined to

be a future plant engineer. On the other hand, my son Jay desires to be the second baseman for the Chicago Cubs. If he makes it, I'll retire." Thompson and her husband Shan reside in Paducah with Amanda, now 10, and Jay, 13 years old.



FRITZ NOW LIVES IN PITTSBURGH, PENNSYLVANIA, WHERE HE IS PRESIDENT AND CHIEF EXECUTIVE OFFICER OF PYRAMID HEALTH, A HEALTH-CARE NETWORK.

JAMES FRITZ, *M.B.A., Business Administration, '76*, resides in Pittsburgh, Pennsylvania, and serves as president and chief executive officer of Pyramid Health, a health-care network offering nine local hospitals, physicians' organizations and rehabilitation facilities. Fritz says his biggest challenge is bringing organizations which were once competitors together in a working relationship. Before coming to Pittsburgh, Fritz worked as president and CEO of Columbia/HCA Healthcare Corporation's One Source Inc., in Orlando, Florida. An avid golfer and runner, he is married to Sandra Markland Fritz, who received a B.A. in English from UK in '88. They have two sons—J. Stephen, 5, and William Markland, 2.



MARTIN, AFTER COMPLETING HIS LAW DEGREE AT UK, BECAME DISTRICT ATTORNEY GENERAL OF KENTUCKY.

WILLIAM B. MARTIN, *J.D., Law, '64*, has been serving as president of Franklin College in Franklin, Indiana, for over 13 years. A native of Frankfort, Kentucky, Martin grew up across the street from the governor's mansion. After completing his law degree at UK, he became assistant attorney general of Kentucky with a specialty in environmental law. Prior to his appointment at Franklin, he was dean of a program combining theology and law at Oklahoma City University.

Reprinted with permission of the Indianapolis Star, Rob Coedel, Staff Photographer

COPING WITHOUT A CURE

After the diagnosis of Alzheimer's, my wife's world became smaller. She began hiding Snickers bars in her sock drawer. This behavior made sense to her, for she knew she shouldn't have candy but had forgotten why. Her world shrank and became, day by day, more incomprehensible. When our son visited and sat in the recliner where I read to her, she stayed in the darkened hall, whispering, "Who's that?" Increasingly she personified her fears. Shadows became animate objects. Shortly after our son's visit and after I had left the house for a doctor's appointment, she called after 20 minutes, terrified that three men were coming up the basement stairs. They disappeared as soon as I returned.

These depictions of confusion and agitated behavior, taken from the journal of a University of Kentucky English professor, vividly show the psychological ravages of Alzheimer's disease.

Alzheimer's, a gradual and progressive disruption of memory function which is accompanied by a decline in intellectual and physical abilities, currently affects almost four million Americans, and that number will continue to rise as our population ages. Without a cure, those stricken and their families have to live with the bewildering and emotionally painful symptoms of the disease. With the loss of memory, patients lose their ability to make sense of things, and many begin to exhibit symptoms of "behavioral agitation"—inappropriate behaviors such as yelling, wandering, repetitious actions, striking caregivers, hallucinating, paranoia, inappropriate sexual behaviors, and pacing that may result from the patients' confusion, anger, and fear about what is happening to them.

The treatment of these symptoms is the subject of one of several studies currently being conducted at the Alzheimer's Disease Research Center of the Sanders-Brown Center on Aging. J. Wesson Ashford and Frederick A. Schmitt, associate professors of psychiatry and neurology, and Marie

W R I T T E N B Y
L A U R A L E E B R O T H E R
P H O T O S B Y L E E T H O M A S

Smart, licensed social worker, comprise part of the research team investigating this aspect of Alzheimer's. The project began in 1994 and is nearing conclusion, with most patients having completed their course of treatments. The study, sponsored by the National Institute on Aging, is part of the Alzheimer's Disease Cooperative Study Project coordinated by the University of California at San Diego, and is being carried out at 28 other Alzheimer's Research Centers across the country.

Ashford, the primary investigator in this study, says behavioral agitation is common for Alzheimer's patients because "People lose the understanding of what's happening in their situation, and when the context is lost they behave inappropriately."

For example, if most people misplace an item, they can think back and remember where they put it. Alzheimer's patients can't remember where they put some items, so they can become agitated and may start yelling or accusing people of stealing from them. Ashford says this agitation is often the most disturbing aspect of the disease to both the patient and family.

Doctors have long used drug therapy to treat behavioral agitation in Alzheimer's patients. In the past, drugs such as phenobarbital and Valium were used to "calm"

C O N T I N U E D O N P A G E 2 6



When Alzheimer's patients can't remember where they put some items, they may become agitated and may start yelling or accusing people of stealing from them.

patients. Ashford says that, unfortunately, patients often came out from under the effects of the sedatives more agitated than before. Various drugs in different combinations have been used in medical practice, but it has been hard to pinpoint the exact benefits of any one drug and the proper dosage needed to maximize effectiveness because, as Ashford puts it, "These things haven't been carefully studied."

This research project was designed to test two medications widely used to treat behavioral agitation in an effort to pinpoint which behaviors each drug seems to help. The Alzheimer's patients chosen for the study received one of the two drugs, a placebo, or behavioral therapy. In addition to learning which drug works best for which symptoms, the researchers also wanted to determine which dosage is most effective. As Schmitt says, "We were allowed to start with a certain dose and adjust it for both medicines, so that we can see what behaviors we're influencing and how good the dosages are that we're using."

Whereas most clinical studies focus on one drug, Ashford says, "This study was designed in a very experimental way to test these four different things: the placebo versus the behavioral therapy versus the two drugs."

The two drugs being compared, Haloperidol and Trazodone, were chosen because they have been widely used clinically for many years, and both can be used over

the long term without patients developing adverse side-effects. Even though these drugs have been used extensively, their benefits have not been carefully established. Haloperidol is an antipsychotic medication and is helpful in treating patients with hallucinations and paranoia. Ashford believes Haloperidol is helpful in treating these sorts of agitated behaviors because it blocks the neurotransmitter dopamine, causing movement and thought to slow down, which seems to help Alzheimer's patients clarify their thinking. Trazodone, which is an antidepressant with sedative side-effects, seems to work by affecting the neurotransmitter serotonin, which researchers believe plays some role in focusing attention and promoting sleep. Trazodone has been shown to help the elderly Alzheimer patient sleep and appears to calm and relieve anxiety.

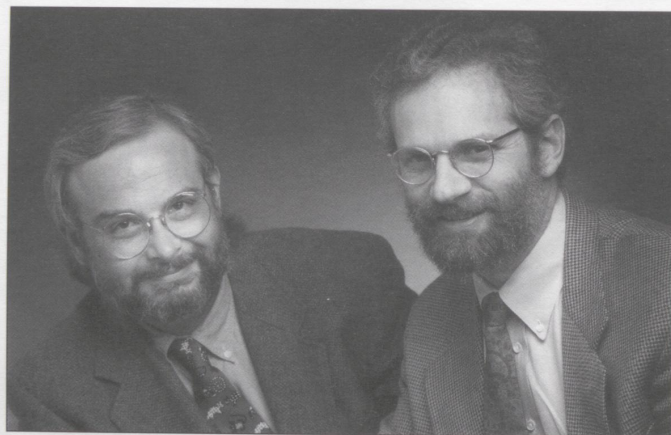
The behavioral aspect of the project is monitored by Marie Smart. This approach helps caregivers recognize agitated behaviors and helps them manage the behaviors rather than confront the patient. As Smart says, "Basically, behavioral therapy involves finding ways to help caregivers approach these folks appropriately." She says one of the common issues that families have to

deal with is the Alzheimer's patient becoming very agitated in the mid to late afternoon. Smart has found that some patients who exhibit this behavior often worked second shift all of their adult lives, and so when afternoon comes around, they are ready to go to work. Smart believes "This is something that is deep-seated in their memory; at this time of day, they think there is something they should be doing." Therefore, caregivers need to structure some activities for patients at that time of day. Smart feels that behavioral therapy and medications "go hand-in-hand" because even when families do everything possible in terms of behavioral approaches, there are still patients who need medication.

After the patients in the study were screened and received their medication, they were closely monitored to check for improvement in their behavior or for any adverse effects from the treatment. The two doctors saw the patients and their families weekly, while Smart had several formal interactions with the patients and their families throughout the study. To avoid bias, Ashford, Schmitt, and Smart conducted the study "under a blind," which means that they did not know which drug

patients were receiving. As Schmitt says, a blinded study such as this requires that patients be closely monitored on a regular basis to check for side effects from the medications or sedation. The doctors also monitor the patients to determine if the agitated behaviors have disappeared or if new agitated behaviors are suddenly appearing.

Smart explains that she monitors patients in terms of their functional abilities. Are they able to do more around the house than previously? Are they calmer and more focused in what they are doing? She is also concerned



Frederick Schmitt (left) and J. Wesson Ashford are part of a University of Kentucky team working to treat Alzheimer's patients' behavior problems.

Social worker Marie Smart wants to help caregivers recognize agitated behaviors of Alzheimer's patients and help caregivers manage these behaviors rather than confront the patient.

with the caregivers themselves and questions them about their stress levels and sleeping patterns.

Everyone involved in the study agreed that the most difficult aspect was obtaining the patients. While there are thousands of people with symptoms of Alzheimer's, only about one fourth of those are clearly diagnosed cases, and only about one third of those can be classified as "agitated." The researchers wanted patients who were agitated, but not so agitated they would hurt someone else during the 18 weeks of treatment. Another problem was that some of the ideal patients were already on some other type of medication, and they had to be medication-free for two weeks before they could begin the treatments. This caused a lot of anxiety not only for the patients, but for their family members as well.

During the study, Smart found it difficult to watch patients who were still agitated even after the extensive work on behavioral approaches. She suspects these were patients who were probably on placebo, and she felt "the frustration of knowing we could probably do more."

Both Ashford and Schmitt were surprised and pleased that none of the nine Alzheimer's patients involved in the study at UK had any adverse effects from the medications. As Schmitt says, "Many people felt that treating the agitation in this fashion, particularly with these low doses and with placebo, would result in a lot of people being put into the hospital because the agitation would break through. But we haven't really seen that."

Ashford feels the most interesting aspect of the study is that several of the patients have improved considerably. Because the data have not yet been analyzed from all



centers, neither doctor knows to what degree the improvement resulted from the drugs; perhaps, Ashford says, some of the patients simply felt better because they were able to come in and see a doctor so often.

Ashford, Schmitt and Smart all feel that the most exciting aspect of the study was being able to maintain close contact with the patients and to see them and their families improving. Ashford says, "The thing that makes me feel good about this work is that the patients do get better when we work with them" and "this study allowed us to see them more often, so when we gave them medicine, they could come back the next week and say, yes, it helped." He says that, in practice, he is able to see patients only every few months, but this study allowed him to see them every week for several hours.

Schmitt says it is exciting to have a family member come in and report being able to sleep all week and improve his job performance. And as Smart points out, the benefits extend beyond the patient: "It wasn't just the patient who got better; it was the total situation that improved."

While this project is not an exciting "find-the-cure" study, Schmitt says that "it allows us to fine-tune how we treat the disease." The research is valuable because

until a cure is found there are tens of thousands of such patients who need effective treatments. Hopefully, this study will lead the way for such treatment.

It has been estimated that approximately 60,000 Kentuckians suffer from Alzheimer's and, as Schmitt points out, of that number, roughly half will develop the behavioral symptoms being studied in this project. Schmitt feels another benefit to Kentuckians is that "without having to deal with insurance companies and Medicare restrictions, research allows us

to see patients more frequently, and it's free — free medicine and free care — not just from a single physician, but from a whole team."

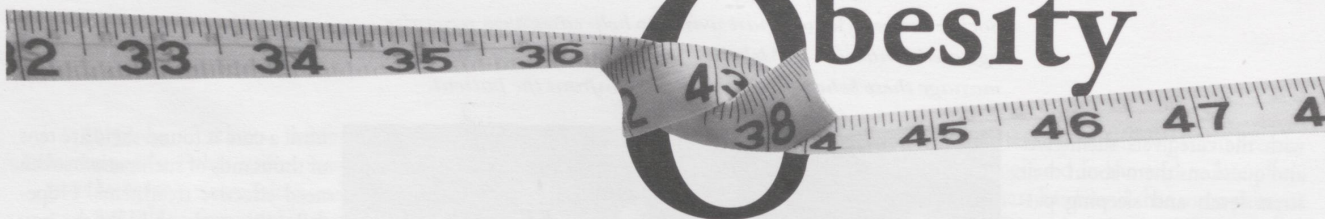
This research will provide treatments which will allow families to provide better care for the patient and which will delay or prevent institutionalization and hospitalization. This will save Kentucky families and the state millions of dollars.

As our country fast approaches the 21st century, we are faced with an exploding population of the elderly, many of whom will develop Alzheimer's. How will we care for our elderly when this happens? This study hopes to provide some answers to that question.

For more information on this study, call Frederick Schmitt at the Sanders-Brown Center on Aging, (606) 323-6040. For general information on Alzheimer's and treatments call the Lexington-Bluegrass Chapter of the Alzheimer's Association, 1-800-288-2323. ■

Alzheimer's disease currently affects almost four million Americans, and that number will continue to rise as our population ages.

Tipping the Scales away from Obesity



Laurie Humphries removes a plastic bag from a shelf and dumps it, scattering brightly colored boxes of over-the-counter antihistamines—Contac, Chlor-Trimeton, Benadryl, Tylenol Allergy/Sinus, Sudafed—across her desk. These common medications to control allergic reactions and cold symptoms interest Humphries not because of their efficacy in treating hay fever, but because antihistamines appear to affect a part of the brain

in Kentucky's obesity problem, they would be only one factor in a complex problem, says Humphries, a professor in the Department of Psychiatry. Behavioral factors such as diet and lack of exercise, psychological factors and physiological factors all appear to contribute to obesity. But beyond the fact that too many Americans eat too much

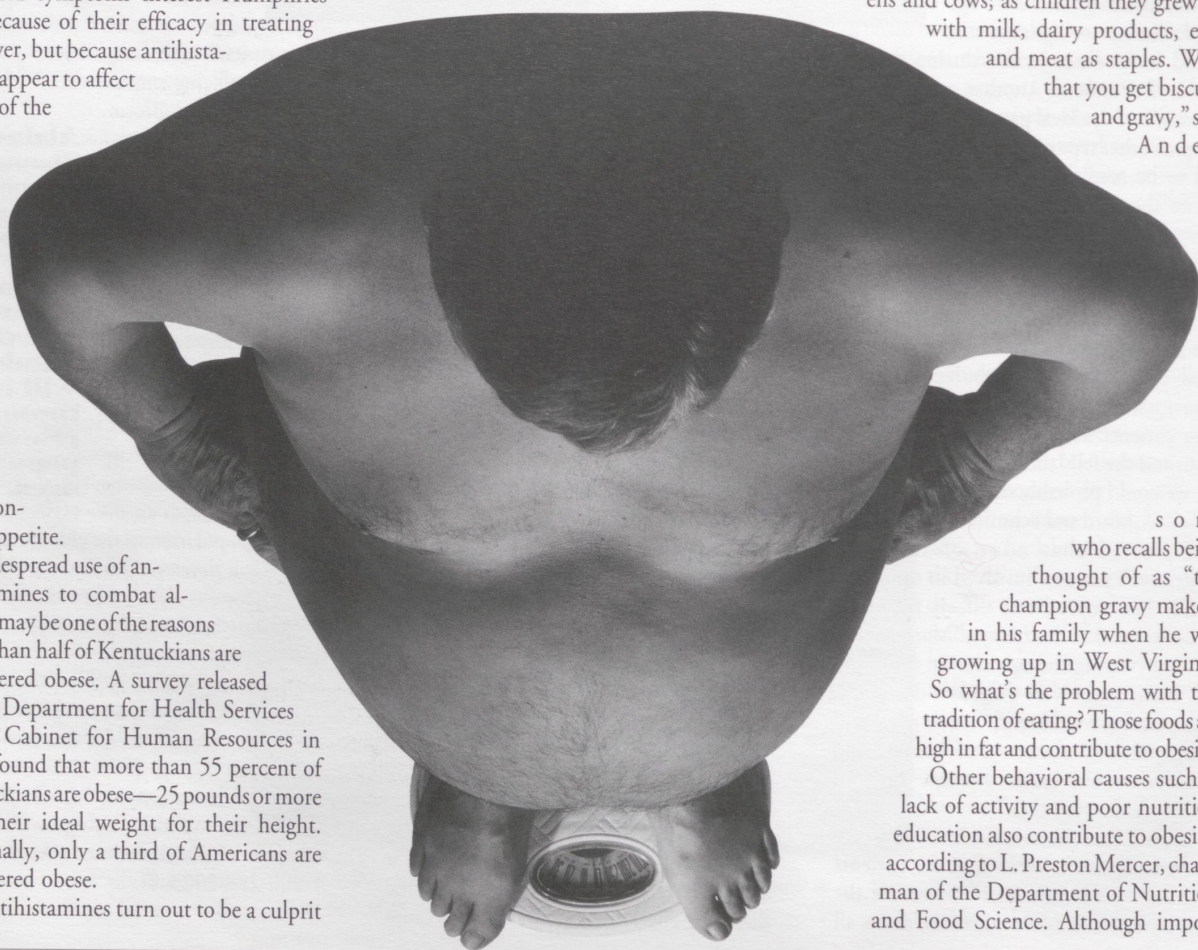
and exercise too little, the causes of obesity are something of a mystery.

"A lot of Kentuckians are tradition-bound," says James Anderson, professor of medicine and clinical nutrition in the Department of Internal Medicine in the UK College of Medicine. "Many were raised on farms where their family had pigs, chickens and cows; as children they grew up with milk, dairy products, eggs and meat as staples. With that you get biscuits and gravy," says Anderson.

that controls appetite.

Widespread use of antihistamines to combat allergies may be one of the reasons more than half of Kentuckians are considered obese. A survey released by the Department for Health Services in the Cabinet for Human Resources in 1995 found that more than 55 percent of Kentuckians are obese—25 pounds or more over their ideal weight for their height. Nationally, only a third of Americans are considered obese.

If antihistamines turn out to be a culprit



son, who recalls being thought of as "the champion gravy maker" in his family when he was growing up in West Virginia. So what's the problem with this tradition of eating? Those foods are high in fat and contribute to obesity.

Other behavioral causes such as lack of activity and poor nutrition education also contribute to obesity, according to L. Preston Mercer, chairman of the Department of Nutrition and Food Science. Although impor-

tant, treating behavioral causes of obesity is "not as exciting to the public as finding a neurotransmitter or hormone or drug where we can say, 'Ah ha! You can eat any way you want to; we will give you a shot and you will never get fat.' That's what people are looking for," Mercer says.

The Histamine Connection

The search for that "magic bullet" drug or neurotransmitter drives much of the research on obesity. Mercer and Humphries's work on the histaminergic system and appetite control, and Anderson's studies of concurrent drug therapy in treatment of obesity, seem promising.

Scientists have known for some time that certain prescription antidepressant and antipsychotic drugs cause weight gain in patients who take them. Those drugs, such as Doxepin and Thorazine, are also antihistamines. When a person takes one of these drugs or an over-the-counter antihistamine for allergies, the drug reduces the effects of histamine in the brain, Mercer explains.

Histamine is a chemical messenger that carries signals from one nerve to the next in the brain's histaminergic system. Mercer and Humphries hypothesize that the histaminergic system is in part responsible for



UK PSYCHIATRY PROFESSOR LAURIE HUMPHRIES SAYS THAT WIDESPREAD USE OF ANTIHISTAMINES TO COMBAT ALLERGIES MAY BE ONE OF THE REASONS MORE THAN HALF OF KENTUCKIANS ARE CONSIDERED OBESE.

regulating appetite and that increased levels of histamine decrease food intake while lower levels lead to increased food intake. Because antihistamines decrease the effects of histamine, they may lead to increased food intake and may account for some weight gain or resistance to weight loss.

Mercer and Humphries are testing this hypothesis in a USDA-funded study called "Histamine, Diet and Food Intake." The hypothesis grows out of earlier work Mercer did in which he put rats on imbalanced diets, such as low-protein diets. Instead of eating more to make up for the deficiency, as Mercer would have predicted, the rats ate less and had increased levels of histamine in their brains. To test the hypothesis that antihistamines may lead to increased food intake, the level of histamine in the rats'

WRITTEN BY
ELIZABETH K. HANSEN
PHOTOS BY LEE THOMAS

"Being overweight makes me feel sad. In today's society it's thin, thin, thin."

"My weakness is sweets. For me meals are simply the means to get dessert."

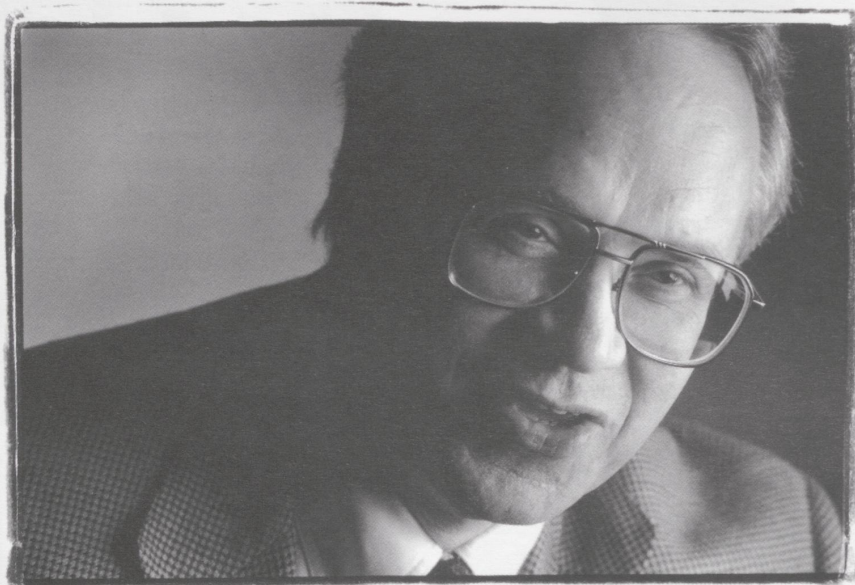
[Quotes from the Lexington TOPS
—Take Pounds Off Sensibly—
Chapter]

brains was manipulated either by modifying the animals' diets or by giving them antihistamines. When histamine was increased, they ate less; when it was blocked, they ate more.

The same process may be related to both obesity and anorexia in humans.

Mercer and Humphries speculate that anorexics may not eat because of physiological problems that result in high histamine levels as well as for psychological reasons. Their poor diets then intensify the problem by further increasing histamine levels. Such people become more anorexic, making it more difficult for them to break the cycle and begin eating normally. Animal studies support their speculation, Mer-

CONTINUED ON PAGE 30



L. PRESTON MERCER SAYS THAT SOME MAGAZINES AND TV SHOWS RELY ON SENSATIONALIST APPROACHES TO DIETING. "IF THE DIET SOUNDS TOO GOOD TO BE TRUE," SAYS MERCER, "IT PROBABLY IS."

cer says, but "we are not yet ready to apply the findings to humans." The researchers are beginning to publish their findings and have requested funding from the USDA to study dietary-induced anorexia. Although the implications are not yet clear, Mercer's studies with rats have also found major gender differences in the operation of the histaminergic system: 90 percent of anorexics are women.

Presently, there is no good treatment for anorexia nervosa, which has a high death rate, says Humphries, whose primary interest is in weight and eating disorders among children and adolescents. She plans to treat anorexics with the antidepressant Doxepin, an antihistamine. Reducing histamine should make anorexics' bodies more efficient in using food so that they can maintain their body weights, she says.

Mercer speculates that anorexia in cancer patients and in AIDS patients may also be related to the histaminergic system. Preliminary experiments have found elevated levels of histamine receptors in tumor-bearing rats and in mice infected with mouse AIDS.

Data from a few experiments indicate that histamine levels may also have something to do with the weight gain smokers often experience when they quit smoking. Mercer speculates that nicotine blocks the enzyme that metabolizes or destroys histamine in the brain, elevating histamine levels and suppressing appetite. When a smoker quits smoking, histamine levels decrease because the enzyme can once again metabolize histamine. People feel hungrier and gain weight.

Fighting to Keep the Weight Off

While Mercer and Humphries are seeking to understand the causes of obesity and anorexia through basic scientific research in hopes of improving treatment options, Anderson conducts applied clinical research that focuses on helping patients lose weight and keep it off by using drug therapy.

For 10 years Anderson and his colleagues have been examining the effects of an intensive weight-loss program on health and risk factors for disease. They've been pleased with their ability to help people lose weight, but not with the fact that many of these people tend to have trouble keeping the weight off.

"We're discouraged with our long-term maintenance data. Although our program is as good as anyone's, this isn't an acceptable outcome," Anderson says.

While behavioral approaches to weight loss such as diet and exercise are important, they alone are not enough to help people keep the weight off. "Many people that have serious, long-term weight problems are going to need something more than counseling," Anderson says. He and others think that "something" is adjunctive, or concurrent, drug therapy.

Anderson cites the example of a UK employee who has fought obesity for years. The woman, who has a lot of situational stresses in her job and family, has lost weight in the past, but has not been able to keep it off. "She was hitting the wall, she was losing patience with the weight-loss program," Anderson says. "I prescribed phentermine and she lost four pounds the next week, didn't have a hunger problem and she's done really well." Phentermine acts like amphetamine, but is non-habit-forming.

The effects of phentermine and

fenfluramine—both singularly and in combination—on weight maintenance is the focus of Anderson's research. Fenfluramine affects the level of serotonin, a brain chemical that causes a feeling of pleasure and satisfaction after eating. This drug tends to decrease binge eating and to sustain a feeling of fullness.

Anderson and his colleagues are doing clinical studies with people who are classified initially as moderately to severely obese. That means that they are 20 to 80 percent above their ideal body weight. Women who begin the weight-loss program are 25 to 80 pounds overweight; men are 30 to 100 pounds overweight.

In one research protocol, after participants have lost at least 20 pounds, they are assigned to one of three treatments. For 16 weeks, a third of the participants take phentermine, a third take fenfluramine and a third receive no drug treatment.

In another protocol, patients are given a combination of phentermine and fenfluramine for a year through both the weight-loss phase of program, which may last 12 to 20 weeks, and the maintenance phase. These patients are matched on age, weight and gender to persons who participated in the program in 1995 but did not receive drug therapy. The two groups will then be compared.

Anderson is pleased with the preliminary data from the study. With the drugs, "we're seeing people continuing to lose weight in the maintenance program, which is unusual. Usually people maintain for a little while and then start gaining weight in our maintenance program." Participants are reporting decreased appetites and few negative side effects.

"We don't have hard data to know that these drugs are working, but we are encouraged with what we have seen so far," Anderson says.

Assessing the News about Obesity Cures

Whether drugs such as phentermine and fenfluramine will turn out to be "magic bullets" in the treatment of obesity remains to be seen. Anderson, Humphries and Mercer are encouraged by their findings so far. But they also know that not every new discovery reported about obesity turns out to be valid. For example, a few months ago the media carried reports that obese laboratory mice had low levels of a hormone called leptin and that injecting them with leptin caused them to lose weight. The reports were erroneous. Obese people actually have high levels of leptin, and the more obese they are, the more leptin they have.

How is the average Kentuckian to evaluate new reports of obesity causes and cures? Anderson recommends that consumers file away new information and not act on it until they have seen confirmation of the original report.

"The best source of scientific information is the peer-reviewed literature. Usually, the average person doesn't read scientific journals. He's going to be drawn to magazines or TV shows, some of which put out sensationalism," Mercer says.

He adds: "If the diet sounds too good to be true, it probably is." ■

"I eat when I am happy
& when I am stressed. I
guess that is 'emotional'
eating."

"Sweets and
bread are my
main trouble."

"One
of my
weaknesses
is
cheesecake.
Once I start
on it I can't
leave it
alone."

KIOSK

UK HEALTH COMMUNICATION RANKS HIGH IN NATIONAL SURVEY

The University of Kentucky's graduate program in communication got some good news recently. According to the Speech Communication Association, UK's doctoral program in communication ranks among the best in the nation. UK ranked 11th in a survey of experts in applied communication, specifically in the area of health communication. SCA, the largest professional organization of its kind in communication, asked its members to rank doctoral programs on the basis of national reputation.

UK's program is by far the youngest of the top 15 ranked schools in the survey. "We were particularly pleased since our doctoral program produced its first graduate only 15 years ago," Jim Applegate, chair of the Department of Communication, says. "We were competing with schools that have had programs since early this century."

Applegate says UK's national visibility is due to the concentration of resources on health communication. Outside research grants to UK's health communication program, totaling more than \$13 million over the past 10 to 12 years, have attracted national attention as well as top doctoral students. UK's program has focused on the effective design of public health campaigns on AIDS, and improving drug abuse and teen pregnancy prevention. Applegate adds that the pro-

gram has also focused on utilizing new communication technologies in disseminating health information and improving interpersonal communication between health providers and clients. The communication program also conducts a bi-annual health

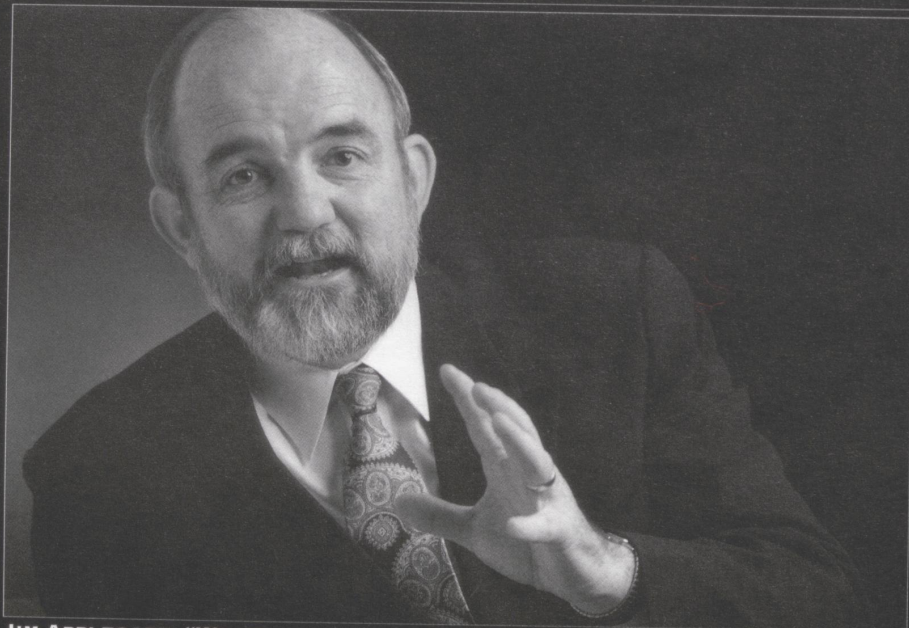
conference that draws scholars from across the country.

This was the first year the SCA has conducted a doctoral communication survey, and Applegate expects UK to move up the list in the future. He also expects other universities to expand studies in health communication.

"There are a number of more established programs in our discipline that are discovering health communication because they're recognizing the many applications," Applegate says. "We'll have to keep on our toes to stay ahead of them."

THE TOP 15 HEALTH AND POLITICAL COMMUNICATION PROGRAMS AS RANKED BY SCA EXPERTS:

1. Purdue University
2. University of Pennsylvania
3. Maryland, College Park
4. Northwestern University
5. University of Oklahoma
6. Michigan State University
7. Stanford University
8. University of Arizona
9. University of Southern California
10. University of South Florida
11. **University of Kentucky**
12. Arizona State University
13. University of Illinois, Urbana-Champaign
14. University of New Mexico
15. University of Texas, Austin



JIM APPLEGATE: "WE WERE COMPETING WITH SCHOOLS THAT HAVE HAD PROGRAMS SINCE EARLY THIS CENTURY."

ELECTRICAL ENGINEERS WIN \$420,000 IN GRANTS

The National Science Foundation is putting stock in the future of two University of Kentucky electrical engineering professors. Stephen Gedney and Keith Whites won separate four-year grants totaling \$420,000.

The NSF awarded Gedney and Whites \$210,000 each under the foundation's Faculty Early Career Development Program, which encourages young scientists and engineers to combine their research and education efforts early in their careers.

Gedney is working on advanced computational algorithms for analyzing electromagnetic and microwave scattering. Gedney spent the fall semester of 1996 in California conducting research at Hughes Research Laboratories. In addition to the NSF career grant, Gedney received \$22,000 from Hughes Research Laboratories for his study in California. He will continue his research at UK.

Gedney says his research focuses on "electromagnetic scattering, with stealth applications, and microwave circuits for very high frequency applications and radar systems." He has worked with companies specializing in aerospace technology in California and electromagnetic sensors in Indiana.

Whites, who is conducting his research at UK, is developing a computer simulation model to predict the electromagnetic behavior of composite materials. The model would be used to explore materials for shielding electronic devices and advanced radar absorbing materials used for stealth vehicles.

"This work combines all the elements I enjoy — computational electromagnetics, theoretical aspects — and also has some interesting applications," Whites says. "One application we're looking at is developing simulation tools on the computer that allow us to make and mix different types of particles with different characteristics. And hopefully we'll be able to design better absorbing

materials faster than trial and error."

Whites has been working with absorbing materials for more than four years. His work in this area began in 1992 with another NSF grant. He will continue this work with the career grant to look at more applications.

Gedney has been conducting research in electromagnetics since his master's work in electromagnetic pulse simulation. This work was sponsored by the U.S. Army. Both he and Whites worked as army research assistants in 1986 and 1987.

Gedney and Whites were colleagues at the University of Illinois, Urbana-Champaign, where they each earned master's and doctoral degrees. "Stephen and I have known each other for years. We worked for the same advisor, graduated the same year, both got offers to come to Kentucky and came down here," Whites says. Both came to UK as assistant professors in 1991.

—ALICIA P. GREGORY

UK CHEMISTS WIN NATIONAL AWARDS

Two University of Kentucky researchers have been singled out for national chemistry awards. Professor John Anthony, who is researching the electrical properties of organic compounds, and Frank Derbyshire, who is studying coal utilization, received professional honors.

Anthony was awarded the \$25,000 Camille and Henry Dreyfus New Faculty Award. Out of 76 nominees from across the country, he was one of 12 professors to receive the Dreyfus award and the first UK professor to receive the honor. The Dreyfus award recognizes new faculty members in chemistry and chemical engineering. Anthony's research on the electrical properties of organic compounds may lead to lightweight materials for spacecraft and molecular-sized computers.

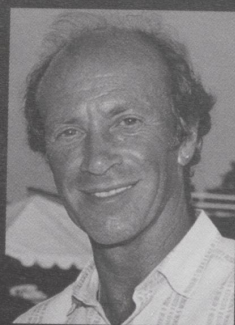
Anthony received his doctoral degree in 1994 from the University of California, Los Angeles, and took a position at UK last summer. He doesn't miss L.A. "The people here in Kentucky are much friendlier, much more

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PAGE 34

polite. I'm really enjoying it here." Anthony found UK appealing because research was already in progress in his area of study. He looked forward to collaboration. "UK is very supportive of the research environment. I'm able to get assistance on questions from other researchers in the areas I'm interested," Anthony says. Buying chemicals and laboratory supplies and posting textbooks on the Internet are his top priorities in using the award money.

Derbyshire won the 1997 Henry H. Storch Award in Fuel Chemistry. The award, given by the American Chemical Society and sponsored by Exxon Research and Engineering Company, includes a \$5,000 certificate as well as an expense allowance up to \$1,500 for travel to the symposium and presentation ceremony in San Francisco, California, in April. The Storch award is given annually to an individual who has made the greatest contribution in the last five years to engineering research on the chemistry and utilization of coal.

"One of the things I've been doing in the last few years is trying to promote using coal as the starting point to produce different materials, particularly



FRANK DERBYSHIRE

carbon materials and absorbent carbons," Derbyshire says. "People are concerned about the environmental effects of coal usage, from its mining to power generation. A lot of the environmental problems can be addressed by using absorbents in the form of activated carbon which can be produced from coal."

Derbyshire says the Storch award recognizes the innovative research taking place in Kentucky. "There hasn't been a Storch winner in Kentucky before or from the university, despite the fact that Kentucky has had a very positive program in coal-related research. It's certainly a bonus as far as work that is going on at the university as a whole, also at the Center for Applied Energy Research, and for me," Derbyshire says.

—Alicia P. Gregory

1996-1997 UNIVERSITY RESEARCH PROFESSORS

Three faculty members were named University Research Professors for 1996-97 by the UK Board of Trustees. They are Ronald Bruzina, philosophy; Thomas Pirone, plant pathology; and Andrew Sih, biological sciences.

The research professorships were established in 1977 to recognize outstanding research achievement and to enhance and encourage further scholarly research productivity. Recipients use the \$30,000 award to cover their research-related expenses and their teaching duties so they may devote themselves to full-time research activities for a year.

Bruzina came to UK in 1970. A former chair of the philosophy department, he received degrees from the University of Notre Dame and Université de Paris-Nanterre.

Phenomenology, one of the dominant intellectual movements of the 20th century, is the focus of Bruzina's books and articles. In recent years, Bruzina has concentrated on the writings of Edmund Husserl, the father of phenomenology, from the final 10 years of his life, and the detailed research notes of

Eugen Fink, Husserl's research assistant during that period.

The professorship will allow Bruzina to prepare an edition of Fink's note materials, spending part of the year in Freiburg, Germany, working from the original documents. That will bring to light the formerly missing component of the pair's work, which Bruzina examines in *Edmund Husserl—Eugen Fink, 1928-1938: Beginnings and Ends in Phenomenology*, which he is completing.

Pirone has been a member of the plant pathology faculty since 1967. A graduate of Cornell University and the University of Wisconsin, he served as chair of the plant pathology department for eight years.

Pirone, who specializes in plant virology, has received a number of research awards, including a Senior Fulbright Research Fellowship to study in England and the American Phytopathological Society Ruth Allen Award for Outstanding Research. He is also a member of the American Society of Virology.

Pirone studies insect transmission of plant viruses, which is the most common way viruses are spread in plants. Certain insects transmit particular viruses, so Pirone studies that phenomenon with an eye toward methods of controlling the

spread viruses.

The professorship will be used to extend the stays of several visiting researchers who are working on research projects in his laboratory.

Sih joined UK in 1982. He holds degrees from the State University of New York and the University of California.

Sih is currently funded by two grants from the National Science Foundation to study the evolution of behaviors that influence ecological patterns. Specifically, he attempts to understand environmental effects on species interactions such as predation and competition that influence biodiversity and species persistence.

His work tries to pinpoint why some species thrive, while others fail. Many of his studies are done in local streams such as in the Raven Run Nature Sanctuary.

The award will allow Sih to work more closely with the post-doctoral, graduate and undergraduate students doing research in his laboratory.

—Vikki Y. Franklin,
Office of Public Relations

GETTING EQUINE HERPES UNDER CONTROL

Equine herpes is a smart bugger. It's learned to adapt and survive in horses and then wreak havoc in horses over a million-year history. That havoc includes causing a variety of diseases: respiratory disease, nervous system problems, and—very importantly—abortions.

In Kentucky—thoroughbred capital of the world—that means potentially serious economic losses each year. "It's a recurring and predictable problem each year," says George Allen, a researcher in veterinary microbiology with the University of Kentucky College of Agriculture's Gluck Equine Research Center.

"It causes millions of dollars in damage," he adds. "This past breeding season there were 37 abortions in Kentucky attributed to equine herpes virus. When one considers prices paid at recent Keeneland yearling sales ranging from \$300,000-\$400,000 to well over \$1

million, the dollar loss from such unnecessary abortions is apparent."

It's just one disease that affects horses, but it is a significant one that Allen is devoting a career to curing—or at least controlling. He's not the first. He follows a long line of distinguished scientists to devote lives to this endeavor.

"I'm the fourth generation of scientists in this department to study this disease," he says. "W. W. Dimock, Roger Doll, John Bryans each were mentors of subsequent investigators. Information was passed down for four generations. Three generations of vaccines have been developed to fight the disease."

Why were so many vaccines necessary?

"This virus has proven to be a formidable opponent," Allen says. "It is an old virus. It is a 'survival smart' virus. It has proven mostly smarter than we are."

But progress is being made.

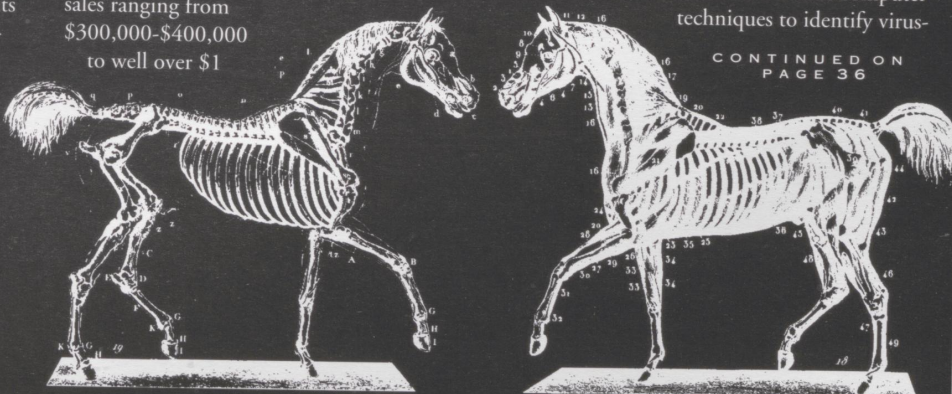
"The current vaccine is called 'Bryan's Vaccine,'" he says. "Each has proven more effective than earlier ones. Bryan's Vaccine is more effective than any. But none will knock out the virus. There is still need for improvement."

That's where Allen comes in.

His research focuses on identifying components of the virus and on components of horses' immune response that aid in protection from the virus. Using microbiology techniques, he gathers basic information on the virus and how the horse reacts to it so that a foundation of knowledge can be developed to make more effective decisions.

"All horses are immune to the virus for very short periods after infections," he says. "We want to find a way to increase the duration of that immunity. We really are dissecting the virus, not with a scalpel but with the tools of molecular biology, tools that include computer techniques to identify virus-

CONTINUED ON
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specific immune cells in the horse."

Simply speaking, if he could get the horses to produce more of them, it could be possible to eliminate or greatly reduce the incidence of, the disease.

How close are Allen and his colleagues to achieving their goal? Is a breakthrough imminent?

"I can't call it a breakthrough yet," he says. "Our work at the Animal Health Trust, the British equivalent to the Gluck Center, has resulted in a scientific publication that presents a new technique that describes and identifies virus-specific immunity cells, specifically herpes virus immunity, in horses. This could lead, down the road, to better methods for controlling the disease."

—**Jerry Robbins,**
Agricultural Extension

NEW HOPE FOR PARKINSON'S PATIENTS

Parkinson's disease, a progressive disorder typically occurring late in life, strikes the area of the brain that regulates motor functions, robbing people of the ability to walk and speak. An estimated 500,000 to 1.5 million Americans are affected, with approximately 60,000 new cases diagnosed each year. There is no cure. Following the onset of

symptoms, patients typically live for 10 to 15 years, and those afflicted eventually are confined to a bed or wheelchair; many develop a form of dementia.

Don Gash, professor and chair of anatomy and neurobiology at the University of Kentucky medical center, explains that at the root of the problem is a slow degeneration of dopamine neurons in the brain. A drug called levodopa, or L-dopa, can be taken to temporarily block symptoms and works by boosting dopamine-producing cells. Patients generally maintain a good response to the drug for approximately three to five years. Those in the later stages of the disease do not respond as well, however, and several significant side effects accompany long-term use. L-dopa chains those it does help to a rigid timetable of multiple daily doses because its effects typically last for only four hours.

Research out of the University of Kentucky College of Medicine is providing hope, however, that there may soon be a new, more effective treatment—one that promises to have fewer side-effects and to work much longer throughout the progression of the disease. The findings by a team headed by Gash were published in

the March 21, 1996, issue of *Nature*. Building on earlier studies that demonstrated the ability of a naturally occurring neurotrophic factor known as GDNF (glial-cell-line-derived neurotrophic factor) to increase the amount of dopamine produced by neurons in laboratory rats, Gash found dramatic behavioral improvements in a higher species of animal (the Rhesus monkey) whose symptoms were much closer to those of the Parkinson's patient. When GDNF was administered to primates with induced Parkinson's disease, four of the five cardinal features of the disease were significantly improved. What's more, one injection of GDNF produced beneficial effects lasting four weeks. Among the findings was that dopamine neurons became, on average, 20 percent larger with an increased fiber density, suggesting GDNF has the power to rescue and restore dopamine neurons.

This was the preclinical work needed to establish the first human trial of GDNF. In August, AMGEN, Inc., a pharmaceutical company headquartered in California, initiated multi-center clinical trials with patients with moderate to severe symptoms. The trials will last 12 to 15 months. Since GDNF does not readily cross the blood-brain barrier, it is being administered by a surgically implanted catheter that delivers a continuous supply

of trophic factor to the brain.

"The enthusiasm (in the scientific community) ranges from being very excited to being skeptical about what the results are going to be," says Gash. "Some of us who have seen results in animals believe it may revolutionize the treatment of Parkinson's disease."

"There has been a great deal of interest in loss of cognitive function in aging, but much less in the loss of motor function, which affects a large segment of the population and certainly has severe economic and social consequences," Gash says. "We believe that while there are multiple factors involved in normal aging, the dopamine system has the potential of being the major contributor. GDNF gives us a way to stimulate the remaining dopamine neurons to determine how much functional recovery can be stimulated. Our ultimate goal is to find simple ways, working with the body's own systems, to protect and preserve motor functions as we age."

—**Barbara Greider,**
*Medical Center Office of
Public Affairs*

UK FUNDING AGAIN TOPS \$110 MILLION

For the second year in a row the University of Kentucky has received more than \$110 million in extramural funding. The 1995-96 fiscal year



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total was \$114,086,391 in grants, contracts and gifts from outside the university.

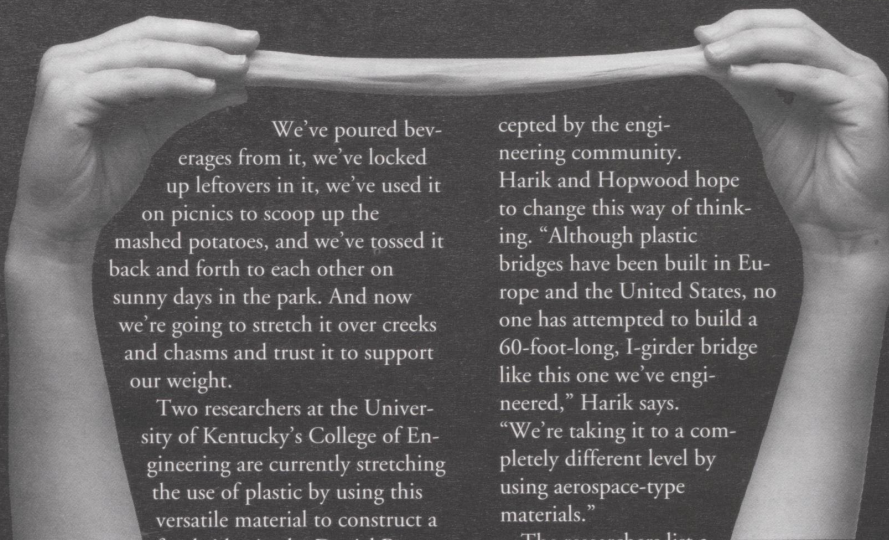
This is an impressive amount for the university, says Fitzgerald Bramwell, vice president for Research and Graduate Studies, particularly in light of recent government spending cuts for research. Funding dropped only slightly, about two percent, from last year's total, \$116,839,199.

An increase in funding from industry contracts and a record year of gifts earmarked for research helped keep funding high. "Our overall strategy," says Bramwell, "is to move from being an outstanding regional research institution to one with national and international prominence."

Increased funding dollars have a clear impact on Kentuckians, he adds. For example, seeds developed through plant research have helped farmers, environmental studies have helped improve community water supplies, and research directed toward improved child restraints has given better protection to children in cars.

"We could literally go from A to Z in the number of projects that affect Kentuckians, while bringing in quite a few dollars to the state's economy as well," Bramwell says.

HERE'S A WORD FOR YOU: PLASTICS



We've poured beverages from it, we've locked up leftovers in it, we've used it on picnics to scoop up the mashed potatoes, and we've tossed it back and forth to each other on sunny days in the park. And now we're going to stretch it over creeks and chasms and trust it to support our weight.

Two researchers at the University of Kentucky's College of Engineering are currently stretching the use of plastic by using this versatile material to construct a footbridge in the Daniel Boone National Forest in Bath County, Kentucky. And though many of us might feel that walking across a plastic bridge is about as safe as going up in a balsawood airplane, Issam Harik, the lead researcher on this project, says that the bridge will be solid, dependable and safe.

"This isn't just any old plastic," says Harik, who with fellow researcher Theodore Hopwood is pleased that the bridge will be, literally, field-tested by hikers in the coming months. "This is fiber-reinforced, composite plastic, or what we commonly refer to as FRP; the I-beams, for example, are made from fibers, resins and other compounds." The 24-inch-deep I-beams made from FRP, similar to a material being used on the shell of the stealth bomber, weigh 110 pounds per cubic foot and supported up to 35,000 pounds during tests in the College of Engineering. Conventional steel beams weigh 490 pounds per cubic foot.

Hopwood is quick to point out that the idea of using composite material to build traditional structures has not been widely ac-

cepted by the engineering community. Harik and Hopwood hope to change this way of thinking. "Although plastic bridges have been built in Europe and the United States, no one has attempted to build a 60-foot-long, I-girder bridge like this one we've engineered," Harik says. "We're taking it to a completely different level by using aerospace-type materials."

The researchers list a plethora of reasons why they believe plastic will be one of the construction materials for the 21st century, along with steel, concrete and wood. Plastic is lightweight. Bridges can be manufactured in one location and transported piece by piece to the building site. And fewer girders are required in a plastic bridge compared to traditional bridges. The pedestrian bridge developed through the UK project, for example, requires only two I-girder beams instead of the normal eight beams required for a traditional bridge of the same length.

Harik mentions, too, that the bridges are much easier to assemble on the spot. UK engineering graduate students Brad Robson and Pete Szak, working alone for the most part, assembled the span and part of the bridge's flooring in just over one day. "And you don't need a crane," Robson points out.

"This is the true bridge to the future," says Harik. "I don't see it getting much use in the short term, this year or next, but it is coming."

—Peg Teachey,
UK College of Nursing

WRITTEN BY CAROLE SILER



PHOTO BY LEE THOMAS

U P D A T E U P D A T E U P D A T E

U P D A T E U P D A T E U P D A T E

ELISA: GETTING A

The success of Thomas Tobin's research can be measured by the dozens of order forms spilling out of plastic files at Elisa Technologies. Five kits ordered by the Jockey Club of South Africa; 60 kits going to Italy; 50 kits heading for Hong Kong. Denver, New Zealand, Brazil, the Dominican Republic—the list goes on. Each kit contains a test which can detect illegal drug use.

"When we shipped tests to the island of Mauritius in the middle of the Indian Ocean, I knew we were really stretching out," Tobin laughs.

In 1985 The Kentucky State Racing Commission and the Equine Drug Council charged the Gluck Equine Research Center with solving the problem of illegal drugs being used on race horses. "No one had tackled this problem on the scale we did, and we wondered how we were going to do it," says Tobin, a veterinarian/toxicologist at the University of Kentucky. With what he calls "absolutely critical input" from David Watt of the Department of Chemistry and Dan Tai of the College of Pharmacy, a large number of ELISA (enzyme-linked immunosorbant assay) tests were developed in two years. These tests can detect more than 100 drugs which are used to give horses greater stamina and make them run faster, or slow them down.

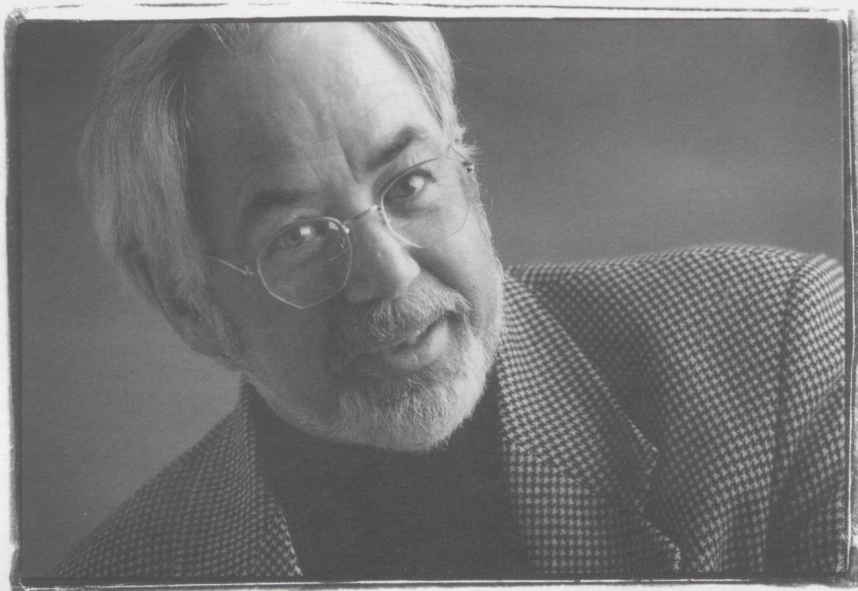
"We had no guarantee it would be a success, but we staked our reputations on it," Tobin says. With more than \$1

million in sales of ELISA tests for 1995, the reputation of Tobin's team seems intact.

What is now a booming commercial business housed in a 20,000-square-foot brick building two miles from the UK campus began in the Gluck Center's laboratory in 1989. At that time, Tobin's lab was manufacturing the ELISA tests and shipping them out to racing au-

thorities in the United States on an experimental basis. In the first three months they sold \$12,000 worth, Tobin says. In the second three months their income totalled \$50,000.

Tobin's research had become a commercial business, so it moved off campus into a cramped two-room office with a lab technician, a secretary, one sink and two refrigerators. Under the



WHEN TOBIN'S WORK ON ELISA WAS FEATURED IN *ODYSSEY* IN 1985, HIS LAB HAD SOLD \$62,000 WORTH OF ELISA KITS IN SIX MONTHS. ELISA SALES TOPPED \$1 MILLION IN 1995.

FIX ON ILLEGAL DRUGS

name WTT for the Watt-Tobin-Tai team, the technology was quickly sold to investors, and in 1992 it was purchased by Neogen Corporation of Lansing, Michigan. Neogen, which specializes in safe-food products, named the racing products division Elisa Technologies.

Elisa Technologies has 32 employees, multiple refrigerators, a lab that occupies one floor, and its stock is traded on the NASDAQ stock exchange. UK receives royalties from the ELISA-test sales, some of which go to Tobin, Watt and Tai.

At \$88 to \$99 for an ELISA kit, which can test for one drug specifically or a group of drugs, purchasers have a very effective, quick, simple, and inexpensive way to nab dishonest horsemen, says J.T. Ice, a UK graduate in political science who is sales manager for racing products at the Elisa Technologies Division.

Scott Stanley, director of toxicology at Truesdail Laboratories in Tustin, California (and a graduate of the UK toxicology center), agrees. The Truesdail lab has been using ELISA for five years, testing for all racing jurisdictions in Washington, Oregon, Idaho, Nevada, California, Indiana and Kentucky, which of course means that Stanley and his colleagues test horses that run in the Kentucky Derby. Stanley says illegal drug use in racing has diminished because "horsemen know ELISA's being used. It's a definite deterrent."

And now that the ELISA test is out of the gate, it's not just for horses anymore. ELISA tests are used after camel races in the Middle East, to test greyhounds, to test people, and to test raw materials for feeds. "Yes," says Ice, "our ELISA is the French government's official test for opiates in feed. When too many racehorses tested positive for morphine, the French government traced the culprit to poppy seeds in feed coming out of Spain." France now orders 100 ELISA kits a year for this purpose.

The test, which can detect drugs in urine, blood, saliva, hair samples, and even the retina of the eye, also went to the 1996 Olympic and Paralympic Games in Atlanta. SmithKline Beecham's clinical laboratories chose ELISA to test about 2,500 athletes.

Further north, ELISA showed up at the Ohio State Fair. The reason: show animals at the fair have become a sort of new "cash crop."

4-H members and members of other such organizations who used to earn a blue ribbon and adulation from the hometown folks for showing off their prize pigs, lambs and cattle, now get money and scholarships. Those financial rewards brought about a breed of people who help 4-H youngsters "prepare" their animals for prizes. In 1994, state agriculture investigators suspected some animals had been given clenbuterol, a drug that alters the fat/lean ratio. In addition to the dishonesty in winning the prize, when the

4-H animals ended up in the supermarket, consumers absorbed the drug which could cause heart and respiratory problems. Richard Sams, director of Ohio State University's toxicology lab, used the ELISA test on the eyes of the suspected animals. Exhibitors whose animals tested positive for the illegal drug were barred from future events, Sams says. The state also enacted legislation to test animals at all fairs. No drugs were detected this year, Sams says, and adds, "We couldn't have done it without the ELISA test."

Currently, Elisa Technologies is running several lengths ahead of the competition. Similar technology developed at Cornell University in Ithaca, New York, after Tobin's work and now sold by a spin-off company, has captured the market in only New York, New Jersey and Maryland, Ice says.

The supersensitive ELISA test, which draws its strength from being able to ferret out a trace of drugs, also has its drawbacks. Honest horsemen can get nailed for miniscule traces of legitimate medications administered by veterinarians because the test can easily detect traces of legitimate therapeutic medications.

Tobin and his colleagues are now working on standards, which he terms "No Effect Thresholds," that will make it easier to determine the difference.

"Solving this problem may take longer (than the ELISA test), and we may experience setbacks, but we will solve it," Tobin says. ■

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Odyssey is published because the university feels that your support and understanding of the importance of UK research activities are critical—now perhaps more than ever.

Odyssey is not just a magazine—it is a resource which serves as the basis for some very important outreach activities. The articles appearing in *Odyssey* are rewritten—in a briefer format—for a newspaper column titled “UK Science & You.” This column is sent to every newspaper in Kentucky and is a regular feature of many of the weekly papers. Through these columns we can reach a potential audience of 1.4 million readers—letting them know of some of the advances that have been made through research, of opportunities for their children in research and science careers, and of particular programs where UK research has made life better for them and their families.

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PARTING SHOTS

“It is no disgrace to start over. It is usually an opportunity.”

—George M. Adams, author (1878-1962)

“Research is to see what everybody else has seen, and to think what nobody else has thought.”

—Albert Szent-Gyorgyi, biochemist (1893-1986)

“It is a good morning exercise for a research scientist to discard a pet hypothesis every day before breakfast. It keeps him young.”

—Konrad Lorenz, ethologist (1903-1989)

“The more original a discovery, the more obvious it seems afterwards.”

—Arthur Koestler, novelist, essayist (1905-1983)

“What is research but a blind date with knowledge?”

—Will Henry, chemist (1744-1836)

“Results! Why, man, I have gotton a lot of results. I know several thousand things that won't work.”

—Thomas A. Edison (1843-1931)

“If you do something once, people will call it an accident. If you do it twice, they call it a coincidence. But do it a third time and you've just proven a natural law.”

—Grace Murray Hopper, U.S. military leader, mathematician (1906-1992)

“Creative thinking may simply mean the realization that there is no particular virtue in doing things the way they have always been done.”

—Rudolf Flesch, reading specialist (1911-)

“Basic research is when I'm doing what I don't know I'm doing.”

—Werner von Braun, rocket scientist (1912-1977)

“If you do not expect the unexpected, you will not find it.”

—Heraclitus (B.C. 535-475)

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