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

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

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

Top Drug Abuse Researcher Now at UK

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

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

“Now that I think of it,” says Nixon, who came to the University of Kentucky last year from the University of Oklahoma, “being PI on a grant like this is kind of like conducting an orchestra. Every member of the team is essential, with each playing a separate but integrated part.”

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

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

“We know that a large percentage of alcoholics smoke—from 79 to 96 percent of them—but through the course of 40 years or so of abuse studies, that fact has been largely ignored,” says Nixon. The strong correlation between substance abuse and smoking, the fact that nicotine has a direct effect on cognitive processes, and the widespread anecdotal evidence that people “feel more
relaxed” and “work better” when they smoke led Nixon to hypothesize that there may be some compensation for substance abusers who smoke.

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

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

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

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

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

A second project, which may be even more time-intensive for Nixon and her staff, has to do with the effect of moderate drinking on older adults.

“There’s an ongoing and growing concern about older people who continue to drink socially. Is it safe for them to drink? To what extent does it affect their driving? A careful, empirical study of the effects of moderate doses of alcohol in older adults and then a systematic evaluation of their performance hasn’t been done.”

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

“We often hear that the aging population is more sensitive to alcohol. At the same time, we read that one to two drinks a day may be healthy. But do these two drinks affect a 50-year-old woman the same as they do a 75-year-old woman? What we want to do in this study is to be more precise about issues of sensitivity to alcohol for various subgroups of
older people." As in her other major study, she and her staff are continuing to recruit volunteers for this trial.

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

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

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

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

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

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