

Alcohol, the brain under study

3 GRANTS HELPING UAMS TEAM LOOK FOR TREATMENT MEDICINES

BY CAROLYNE PARK

Wednesday, November 25, 2009

LITTLE ROCK — UAMS scientists are working to analyze alcohol's toxic effect on the brain and identify medicines that can block its destruction of brain cells.

The 10-person research team has gotten a \$3.1 million boost for its work in the form of three grants from the National Institute on Alcohol Abuse and Alcoholism, part of the National Institutes of Health.

The goal is to find medicines that can help treat alcoholism and prevent further brain damage in those considered most vulnerable to suffering long-term disability or death from alcohol consumption, said Cynthia J.M. Kane, a University of Arkansas for Medical Sciences professor.

“We’re talking about very high-risk individuals, people for whom alcohol consumption is life-threatening,” said Kane, who works in the College of Medicine’s Department of Neurobiology and Developmental Sciences.

High-risk groups are alcoholic pregnant women and their unborn children; chronic adult alcoholics who drink “day after day, year after year”; and those who consume large quantities of alcohol in a short period of time, known as binge drinkers, she said.

An estimated 22,073 people die in the United States each year from alcohol-induced deaths, not including accidents and homicides, according to the federal Centers for Disease Control and Prevention.

Dr. Debra Fiser, dean of the UAMS College of Medicine, said in a statement that the research could have widespread future benefits.

“Given the magnitude of the problem of alcohol abuse worldwide, the potential significance of this line of research cannot be overstated,” she said.

Kane is the lead investigator on the largest grant, which is for \$1.7 million over five years. It will be used to study how different drugs interfere with alcohol's effects on brain cells and evaluate which drugs or combinations of drugs are most effective.

Paul D. Drew, also a professor in the Department of Neurobiology and Developmental Sciences, is co-investigator on that grant and the principal investigator on the other two grants. Another grant is for \$1 million over two years and is part of economic-stimulus funds from the American Recovery and Reinvestment Act.

The third grant is for \$400,000 over two years. The researchers were particularly pleased to get the grants because federal research dollars are on the decline, and obtaining grants is getting more competitive, Drew said.

Kane started studying alcohol and the brain about 14 years ago. Her early research focused on conditions or disorders that can develop in an individual whose mother drank alcohol while she was pregnant, known as fetal alcohol spectrum disorders.

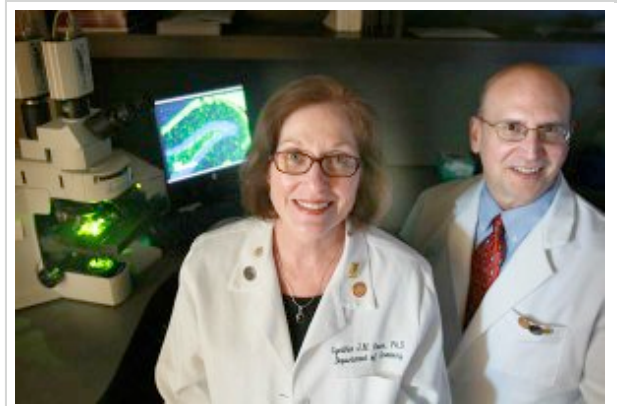


Photo by Rick McFarland

Cynthia J.M. Kane and Paul D. Drew, both professors in neurobiology and developmental sciences at the University of Arkansas for Medical Sciences, stand by a picture showing a slide of brain tissue Tuesday.

“I recognized that we knew very little about the effect of alcohol on the developing brain,” she said.

With the aid of the grant money, the UAMS scientists are expanding their research to examine how alcohol affects the brains of adolescents and adults.

Past research has shown that alcohol causes inflammation and impaired brain function. It affects neurons in the brain, as well as neighboring cells called glial cells. Glial cells are clustered in brain tissue along with neurons.

UAMS researchers are focusing on two specific types of glial cells, known as astrocytes and microglia.

“They support the function and survival of neurons in the central nervous system,” Kane said. “We’re studying the interaction between the neurons and the glial cells and the effect of alcohol on those relationships.”

Several years ago, they discovered that microglia cells were particularly sensitive to alcohol when compared with neurons. Alcohol can kill or alter the function of microglia in lower doses than it affects neurons, she said.

Researchers have also identified certain types of drugs that “can block that toxic effect of alcohol,” Kane said.

Drew said many of the drugs are already approved by the U.S. Food and Drug Administration for other uses.

“That is very appealing because if they’ve been approved by the FDA, they are basically safe in humans, and so it could facilitate the movement toward treatment of alcohol abuse,” he said.

Kane said the hope is to help people most at risk, not to offer protection for people wanting to drink heavily.

“These are life-threatening, very high-risk cases,” she said. “Never would you buy [the medication] at the counter at the pharmacy and then go drink. This is something you would give to people ... to do something to prevent the brain damage. It’s not a preventive, and it’s not a cure.”

Arkansas, Pages 9 on 11/25/2009