

## 'HANGOVER' GENE HOLDS CLUES TO ALCOHOLISM

WEDNESDAY, Aug. 10, 2005 -- Hard-drinking fruit flies have helped U.S. and German scientists uncover a gene that may shed light on humans' tolerance to alcohol.

The gene -- named *hangover* by its discoverers -- is part of a genetic pathway that enables the flies to deal with increasing amounts of alcohol, according to researchers. They also believe this mechanism can lead to alcohol dependence and addiction.

The finding may be important because "identifying the genes you inherit that relate to your tolerance to alcohol helps us understand how genes set you up for a vulnerability to alcoholism," said Dr. James Garbutt, a professor of psychiatry at the University of North Carolina. Garbutt was not involved in the study, which was led by Ulrike Heberlein, an associate professor of anatomy at the University of California at San Francisco. Her team's report appears in the Aug. 11 issue of *Nature*.

In their experiments, Heberlein's group found that flies without the hangover gene didn't develop a tolerance to alcohol when exposed to increased amounts of ethanol (alcohol) vapor. In addition, the team found that the flies missing this gene also have poor responses to other stresses, such as higher temperatures. This suggests that the hangover gene might also play a role in dealing with stressful conditions, the researchers report.

Heberlein's group believes a similar genetic pathway might exist in people. This suggests that alcohol addiction may be triggered by how people respond to high alcohol intake, the researchers say. This finding could lead to new understandings of how alcoholism develops in humans, they add.

Garbutt thinks the findings are interesting, but may not be applicable to people. "The fruit fly is a great model for lots of things," he said. "The question is how will it play out in the human being?" Garbutt believes alcohol tolerance in people is more complicated than just one gene, and does not depend on one or two genetic systems alone. It is an open question whether this discovery will help explain alcohol tolerance in humans, he said.

People's alcohol tolerance is most likely genetically controlled, Garbutt said. "There is good evidence that alcoholism has a strong genetic component," he added. "One of the risk factors in human alcoholism is the ability to tolerate alcohol when you first start drinking. There are some clues about genes associated with that."

This research is important, Garbutt said, because it could point to new methods of identifying a genetic predisposition to alcoholism. "Moreover, if you understand the biology, then we might be able to develop pharmacological tools that can treat somebody who has already developed alcoholism," he added.