

Getting delirium
tremens? a worm
could help you kick
the bottle essay



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In a potential breakthrough for the treatment of alcohol addiction, scientists have produced mutant worms that do not get intoxicated by alcohol, which could lead to new drugs to treat alcohol addiction. Researchers at the University of Texas at Austin generated mutant worms by inserting a modified human alcohol target into the worms. This does not quite mean that you would be able to drink your companions under the table and yet be able to dance with the glass balanced on your nose like Rasputin, or bring down your opponents like James Bond. But it does offer hope for the myriad of alcoholics around the world, not least in India which is losing much of its touted ' demographic dividend' to alcohol.

“ This is the first example of altering a human alcohol target to prevent intoxication in an animal,” said corresponding author, Jon Pierce-Shimomura, assistant professor in the university’s College of Natural Sciences and Waggoner Center for Alcohol and Addiction Research. An alcohol target is any neuronal molecule that binds alcohol, of which there are many. One important aspect of this modified alcohol target, a neuronal channel called the BK channel, is that the mutation only affects its response to alcohol. The BK channel typically regulates many important functions including activity of neurons, blood vessels, the respiratory tract and bladder. The alcohol-insensitive mutation does not disrupt these functions at all.

“ We got pretty lucky and found a way to make the channel insensitive to alcohol without affecting its normal function,” said Pierce-Shimomura.” Our findings provide exciting evidence that future pharmaceuticals might aim at this portion of the alcohol target to prevent problems in alcohol abuse disorders,” said Pierce-Shimomura.” However, it remains to be seen which

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aspects of these disorders would benefit," he said. Unlike drugs such as cocaine, which have a specific target in the nervous system, the effects of alcohol on the body are complex and have many targets across the brain.

The various other aspects of alcohol addiction, such as tolerance, craving and the symptoms of withdrawal, may be influenced by different alcohol targets. The worms used in the study, *Caenorhabditis elegans*, model intoxication well. Alcohol causes the worms to slow their crawling with less wriggling from side to side. The intoxicated worms also stop laying eggs, which build up in their bodies and can be easily counted. The modified human BK channel used in the study, which is based on a mutation discovered by lead author and graduate student Scott Davis, could be inserted into mice. These modified mice would allow scientists to investigate whether this particular alcohol target also affects tolerance, craving and other symptoms relevant to humans.