

Genes that drive you to drink (but don't make you an alcoholic)

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Your genetic make up may predispose you to drink more but may not increase your genetic risk for alcoholism (alcohol dependence). Research published in the open access journal, *BMC Biology*, pinpoints genetic pathways and genes associated with levels of alcohol consumption but not with alcohol dependence in rats and humans.

Led by Boris Tabakoff, Laura Saba and Paula Hoffman from the University of Colorado, Denver, USA, the research team used rats to identify the genetic pathways affecting [alcohol](#) drinking behaviour. They found that the rats' drinking behavior was linked to the pleasure and reward pathways in the brain and also linked to some of the same genetic systems that control satiety and appetite for food. Next, they directly compared genes involved in these alcohol-associated pathways in rats with the human versions of these genes in two male study groups from Montreal and Sydney to identify common genetic factors linked to alcohol use across species.

A novel result of these studies was that genes identified as contributors to drinking behavior in the tested populations were not the same as genes found to predispose to [alcohol dependence](#).

According to Tabakoff, "We know that high levels of alcohol consumption can increase the risk of becoming alcohol dependent in those who have a genetic make up that predisposes to dependence. This is a case of interaction between genes and environment. Indeed, in our study we found that, higher alcohol consumption in humans was

positively correlated with alcohol dependence. However, because different sets of genes seem to influence the level of alcohol consumption, as opposed to propensity for alcohol dependence, we are confronted with great variation in humans. Individuals with a set of genes that predisposes them to drink moderate amounts of alcohol may still have the genetic predisposition to lose control over their drinking behavior, and perhaps become alcohol dependent. Conversely, individuals with a genetic predisposition to drink high amounts of alcohol may not have the genes that predispose them to become dependent."

The authors stress that, "The phenotype we investigated in this paper is non-dependent alcohol intake, and the [genes](#) that influence this phenotype."

More information: Genetical genomic determinants of [alcohol consumption](#) in rats and humans, Boris Tabakoff, Laura Saba, Morton Printz, Pam Flodman, Colin Hodgkinson, David Goldman, George Koob, Heather N Richardson, Katerina Kechris, Richard L Bell, Norbert Hubner, Matthias Heinig, Michal Pravenec, Jonathan Mangion, Lucie Legault, Maurice Dongier, Katherine M Conigrave, John B Whitfield, John Saunders, Bridget Grant, Paula L Hoffman and WHO/ISBRA Study on State and Trait Markers of Alcoholism, *BMC Biology* (in press), www.biomedcentral.com/bmcbiol/

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