

New gene found with potential role in female alcohol drinking

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Gene found for female alcohol dependence

(Medical Xpress) -- Researchers at King's College London Institute of Psychiatry (IoP) have identified a new gene which may have a critical role in the molecular pathways contributing to alcohol drinking and the development of alcohol dependence in women.

Alcohol dependence is a psychiatric disorder influenced by both genetic and [environmental factors](#). It is a progressive disease, characterized by several steps including [alcohol abuse](#) over time which, in some people, leads to loss of control and compulsive drinking. In order to understand how this happens and work towards preventing it from happening, scientists are searching for which [genes](#) are involved and how genes contribute to each stage of the process.

This research provides the first evidence for the involvement of a gene –

Adenylyl Cyclase Type 7 - which is responsible for transmitting signals from outside of a cell, as part of a cascade of activity crucial for normal function of certain brain cells.

Scientists found that when this gene was removed in mice the females drank more alcohol and indeed preferred alcohol to water, however the males did not. The researchers went on to test this in 1703 alcohol dependent people and found that one variant of this gene was less common in alcoholic women than controls.

Dr Sylvance Desrivieres said: 'It is already known that genes play a part in alcohol dependence however to date only a few have been identified. Our research would suggest that this variant would be one factor which might protect women from alcohol dependency. Although we know that many other factors are important for development of alcohol dependence and these may differ for men and women.'

Alcoholism is one of the most challenging public health problems, being a major burden to society and contributing to more than 20,000 deaths yearly in the UK, not only because of direct damaging effects of alcohol on the body but also because of alcohol's harmful effects on others. Estimates of the cost of alcohol related harm to the NHS in England is about £2.7 billion a year, not including costs related to crime and absenteeism.

Among adults in the UK aged 16 to 74, nine per cent of men and four per cent of women show signs of alcohol dependence. Although treatments based on pharmacological and psychosocial interventions have been developed, they are often ineffective and many patients suffer from relapse. Treatments tailored to each patient's requirements need to be developed, which necessitates a better understanding of the biological mechanisms of the disease.

Dr Desrivieres adds: ‘Despite their key role in signaling within cells little is currently known about this gene family so these translational findings are of high novelty and importance for the field.

‘It increases our understanding of the mechanisms underlying alcoholism in females so would be a starting point for studies aiming at developing novel pharmacological therapies or targets for therapies.

Sex-Specific Role for Adenylyl Cyclase Type 7 in [Alcohol Dependence](#) is published in *Biological Psychiatry*.

More information: Sex-Specific Role for Adenylyl Cyclase Type 7 in Alcohol Dependence, [doi:10.1016/j.biopsych.2011.01.037](https://doi.org/10.1016/j.biopsych.2011.01.037)

Provided by King's College London

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