



## Influence of Genes and Genetic Vulnerability on Substance Abuse and Addiction

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### INTRODUCTION

Addiction to various substances, including drugs and alcohol, can result from a combination of environmental and genetic factors. Genetic susceptibility to drug addiction is supported by several families, adoption, and twin studies. However, like any other mental illness, genetic susceptibility to drug addiction looks complex. These obstacles do not follow Mendel's laws. Instead, they are likely to be affected by multiple susceptibility genes, each of which is responsible for the disorder. The more genes a disease requires, the harder it is to identify one of them. This difficulty is exacerbated by the role of environmental factors.

### DESCRIPTION

Related studies using the candidate gene approach can identify substance abuse susceptibility genes supported by the pathophysiological hypothesis of the disease. This review focuses on clinical and molecular genetic studies of substance abuse. Genetic susceptibility is a characteristic that is passed down from parent to child and makes them more susceptible to addiction. This gene is associated with the reduced availability of dopamine in the brain's reward center. In other words, anything that raises the level of dopamine brings out a strong sense of pleasure. Bloom calls this gene a "reward gene" and is associated with other addictive behaviors such as drug addiction, smoking, binge eating and morbid gambling. At least half of a person's susceptibility to drug addiction may be related to genetic factors.

Researchers must first overcome misunderstandings about genetic testing and public distrust. That is, doctors and the general public need a better understanding of the interaction between genetics and addiction. According to a national survey, only 5% of GPs are confident in interpreting genetic tests and only 4%

are confident in proposing gene-based therapies. Understanding the complex interactions between substances involved in substance abuse and addiction is important for their effective prevention and treatment. As new data accumulates rapidly, physicians may soon be able to incorporate genetic testing into their practice to better tailor specific treatments to their individual needs. For example, Volkow explained that a particular type of dopamine receptor count known as D2 can be used to predict whether someone will be dependent on alcohol, cocaine, and heroin. Brain images suggest that people with low D2 receptors are more likely to be addicted than people with many receptors. And the number of these receptors is partially genetic. Of course, environmental factors also have an impact, so trends are not fate, Volkow added.

### CONCLUSION

First, one needs to experiment with medicines, and then one needs to use them repeatedly. At this point, genetic susceptibility helps determine who is addicted. When it comes to tobacco, genetics accounts for about 75% of people's tendency to start smoking. Genes are also responsible for 60% of the propensity to become addicted and 54% of the ability to quit. Not all smokers are the same, so genetic factors can be examined to determine the best route to quit smoking. The genetically determined speed at which the body can metabolize nicotine, for example, makes a difference as to whether a nicotine patch or a nicotine nasal spray will work better long term.

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### CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

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