

# If you're having trouble quitting smoking, maybe you can blame your DNA

December 2 2015, by Karen Kaplan, Los Angeles Times

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A depiction of the double helical structure of DNA. Its four coding units (A, T, C, G) are color-coded in pink, orange, purple and yellow. Credit: NHGRI

Smokers who have tried and failed to kick their deadly habit might be able to blame their DNA.

A new study finds that people with a particular version of a gene involved in the brain's reward system are more likely to succeed in quitting [smoking](#). Compared with people who have other versions of this gene, those with the lucky DNA were more likely to abstain from cigarettes.

The benefits of this genetic variant could be confirmed only for people of Caucasian descent, researchers reported Tuesday in the journal *Translational Psychiatry*. Smokers with East Asian ancestry were just as likely to quit, or not, with any of the three versions of the gene.

The study authors didn't have enough data on black or Latino smokers to say whether the [gene variant](#) had any effect on their ability to quit smoking.

The gene in question is known as ANKK1. It happens to be right next to the DRD2 gene, which helps the brain recognize dopamine, the chemical that's produced in the brain to reinforce useful behaviors like eating and having sex. Addictive drugs, including nicotine, also cause [dopamine levels](#) to spike.

One small piece of the ANKK1 gene called Taq1A seems to influence the function of DRD2. People inherit either an A1 or A2 version of this gene fragment from each of their parents. That means there are three possible genotypes: two A1s, two A2s or one of each.

The researchers, from Zhejiang University School of Medicine in China, analyzed the merits of these three genotypes by combing through data in 23 studies published between 1994 and 2014. These studies looked at 11,151 current and former smokers, who were surveyed once or tracked

over time. All of them allowed researchers to test their DNA to see which version of Taq1A they had.

When it comes to quitting smoking, the helpful type is A2/A2. Compared with Caucasians with one or two A1s, those with two A2s had better odds of kicking the habit. Exactly how much better their odds were is not clear.

As it happens, A2/A2 was the most common genotype among Caucasians who were included in the analysis - 62.5 percent of them had it. Among Asians, that figure was only 39.1 percent. The researchers didn't say how many blacks or Latinos had the A2/A2 version of the gene.

The findings could help researchers develop smoking cessation drugs that could be tailored to people based on their genetic profile, the researchers wrote.

Smoking is the No. 1 cause of deaths that could have been prevented. Globally, tobacco use is responsible for nearly 6 million deaths per year, the World Health Organization says. In the United States, smoking kills 480,000 [people](#) each year, including 42,000 who are exposed to secondhand smoke, according to the Centers for Disease Control and Prevention.

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