

MEN: JUULING MAY RUIN YOUR BLOODLINE FOR GENERATIONS

A new study shows that nicotine use in male mice negatively affect attention and learning capabilities in their children and children's children.

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We know that smoking cigarettes can cause poor health because of the chemical makeup of tobacco smoke, which [causes cancer](#). Nicotine's negative [effect](#) on pregnant women has also been studied fairly extensively, and we [know](#) that when parents smoke cigarettes, their kids are at a higher risk for developing ADHD. But a new [study](#) from *PLOS Biology* suggests that nicotine might be more problematic than we once thought, information that might cast a pall over the surging e-cig industry and [teens taking huge rips of their Juuls for the 'gram](#). According to the study, nicotine dosages in any form may negatively affect attention and learning in your kids and their future kids, no matter how you're consuming it, and these negative traits may be passed down genetically.

In this study, researchers exposed male mice to 200 microgram/ml of nicotine every day for 12 weeks. According to Pradeep Bhide, Ph. D, lead study author and director of the Center for Brain Repair at Florida State University, this nicotine dosage is likely [less](#), proportionally, than the average human cigarette smoker consumes daily. The researchers then bred these nicotine-addicted male mice with female mice who had not been exposed to the substance. They found that the nicotine-addicted mice and two generations of their offspring had behavioral deficits in learning and attention compared to a control group of mice who had not been exposed to any nicotine.

The first generation of baby mice also showed brain-centric physical deficits in the striatum and frontal cortex (the areas of the brain that control behavior, voluntary movement, personality and learning), as well deficits in their dopamine receptors. Additionally, the researchers found modifications in the DNA of the original nicotine-exposed male mice, suggesting that nicotine's negative effects may be transferred genetically. The mice who hadn't been exposed to nicotine showed no such issues.

Overall, this study suggests that cigarettes could be even more harmful to our health than we originally thought, and e-cigs and nicotine patches aren't a wise replacement. It's also possible, Bhide says, that the current generation is experiencing an increase in behavioral conditions like ADHD because of our grandparents' former nicotine habits. "Our ancestral sins may be visiting upon our present and also our futures," he said.

This research feels especially pertinent because of the rise of e-cigarettes, which are marketed as a possible "safer" and [sometimes "healthier"](#) alternative to smoking cigarettes. The [BBC](#) reported in May that 35 million people were vaping e-cigs as of 2016, up from 7 million in 2011, and the e-cig industry is now worth well over \$20 billion. While e-cigs are tobacco-free, they still contain high doses of nicotine (although it's often called "e-liquid" or "e-juice"); Juul, the most popular and recognizable name brand of e-cig in the U.S., contains more than a cigarette pack's-worth of nicotine in a single pod. E-cigs may also contain lead and other toxic metals, according to [Men's Health](#). This new research from PLOS Biology suggests that regularly using any substances with nicotine in them, including e-cigs and even nicotine patches, could substantially affect generational health.

After concluding their experiments, the lead researchers noted that while these findings are scary, they're still just focused on mouse models; as a next step, we need to spend more time researching nicotine's effects on human beings. There's also the lingering question of how much nicotine is too much nicotine for humans. "It is not possible to correlate directly drug concentrations in mouse plasma to human plasma," Bhide said.