

Study finds nicotine-sired male offspring are at risk of addiction behavior and memory impairments

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Parental smoking is a significant risk factor for developing smoking behavior and nicotine dependence in offspring. These findings suggest

that parental nicotine exposure may promote addiction-like behaviors in subsequent generations. Given the significance of cigarette smoking for public health, preventing nicotine use among adolescents is critical to ending tobacco use disorder and decreasing e-cigarette use.

In a novel study published in *Molecular Psychiatry*, researchers from the University of Pennsylvania School of Nursing (Penn Nursing) have discovered that paternal nicotine taking is associated with addiction-like behaviors, cognitive deficits, and anxiety-like behaviors in [male offspring](#). These heritable effects were associated with reduced expression of *Satb2*, a transcription factor, in the hippocampus of male offspring. Increasing *Satb2* expression in the hippocampus rescued the memory deficits associated with paternal nicotine taking in male offspring.

"Understanding how voluntary [nicotine](#)-taking changes germ cells and/or seminal fluid and how these modifications translate into neuroadaptations and behavioral phenotypes in subsequent generations is necessary for understanding the heritability of parental drug taking," says Heath D. Schmidt, Ph.D., Associate Professor and lead author of the article. "Findings from these studies highlight vulnerable populations at risk for developing [nicotine dependence](#), cognitive impairments, and/or mental health disorders."

More information: John J. Maurer et al, Paternal nicotine taking elicits heritable sex-specific phenotypes that are mediated by hippocampal *Satb2*, *Molecular Psychiatry* (2022). [DOI: 10.1038/s41380-022-01622-7](#)

Provided by University of Pennsylvania School of Nursing

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