

Genetics suggest beverage preferences hinge on psychoactive effects

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Why do you swig bitter, dark roast coffee or hoppy beer while your coworker guzzles sweet cola?

Scientist Marilyn Cornelis searched for variations in our [taste genes](#) that could explain our beverage preferences, because understanding those

preferences could indicate ways to intervene in people's diets.

To Cornelis' surprise, her new Northwestern Medicine study showed [taste preferences](#) for bitter or sweet beverages aren't based on variations in our taste genes, but rather genes related to the psychoactive properties of these beverages.

"The genetics underlying our preferences are related to the psychoactive components of these drinks," said Cornelis, assistant professor of preventive medicine at Northwestern University Feinberg School of Medicine. "People like the way coffee and alcohol make them feel. That's why they drink it. It's not the taste."

The paper will be published May 2 in *Human Molecular Genetics*.

The study highlights important behavior-reward components to beverage choice and adds to our understanding of the link between genetics and [beverage consumption](#)—and the potential barriers to intervening in people's diets, Cornelis said.

Sugary beverages are linked to many disease and health conditions. Alcohol intake is related to more than 200 diseases and accounts for about 6 percent of deaths globally.

Cornelis did find one variant in a gene, called FTO, linked to sugar-sweetened drinks. People who had a variant in the FTO gene—the same variant previously related to lower risk of obesity—surprisingly preferred sugar-sweetened beverages.

"It's counterintuitive," Cornelis said. "FTO has been something of a mystery gene, and we don't know exactly how it's linked to obesity. It likely plays a role in behavior, which would be linked to weight management."

"To our knowledge, this is the first genome-wide association study of beverage consumption based on taste perspective," said Victor Zhong, the study's first author and postdoctoral fellow in preventive medicine at Northwestern. "It's also the most comprehensive genome-wide association study of beverage consumption to date."

How the study worked

Beverages were categorized into a bitter-tasting group and a sweet-tasting group. Bitter included coffee, tea, grapefruit juice, beer, red wine and liquor. Sweet included sugar-sweetened beverages, artificially sweetened beverages and non-grapefruit juices. This taste classification has been previously validated.

Beverage intake was collected using 24-hour dietary recalls or questionnaires. Scientists counted the number of servings of these bitter and sweet beverages consumed by about 336,000 individuals in the UK Biobank. Then they did a genome-wide association study of bitter beverage consumption and of sweet beverage consumption. Lastly, they looked to replicate their key findings in three U.S. cohorts.

Alan Kuang is also a Northwestern author on the paper.

Provided by Northwestern University

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