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Asparagus Odor Detection

Can you smell what I can smell?

After eating asparagus, some people notice an unfamiliar odor in their urine. Whether you can smell the asparagus aftermath is influenced by your DNA.

Your Traits Result

kary_mullis, your genetics make you **likely able to smell** the asparagus odor in your urine.

Of 23andMe research participants with genetics like yours:

74% can smell the odor.

26% cannot smell the odor.

Does your urine smell different after you eat asparagus?

How did we calculate your result?

We looked at a place in your DNA (a genetic marker) that affects your chances of being able to smell the asparagus odor. Your combination of variants at this marker is usually found in people who can smell the asparagus odor in their urine.

The genetic marker used in this report has been best studied in people of European descent. The results of this report may be less relevant for people of other ethnicities.

See Scientific Details

More about asparagus odor detection

What causes the asparagus odor in urine?

Scientists believe the asparagus odor in urine comes from molecules that are made by the body when asparagus is broken down. One of the molecules called "methanethiol," contains sulfur and has an odor like cooked cabbage. Some bacteria that are used to make cheese produce methanethiol during the process, which gives cheeses like cheddar and Muenster their aromas.

Discovering the genetics behind asparagus-related odor detection

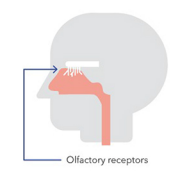
For decades scientists have been searching for a reason why some people can't smell the asparagus-related odor in urine. Some studies have suggested that this trait can run in families, but the details of the genes involved remained a mystery until 2010. Genetic research at 23andMe identified, for the first time, a genetic marker that is linked to the likelihood of smelling the asparagus-related odor in urine.

Genetic result	What it means
GG	Less likely to smell
AG	Likely able to smell
AA	Likely able to smell

The genetic marker is located near the OR2M7 gene. The OR2M7 gene contains instructions for a protein (an olfactory receptor) that detects odor molecules. But many questions still remain about how, exactly, this genetic marker influences smell detection.

The biology of smell

The skin lining your nose contains nerve cells that are covered in molecular sensors, called "olfactory receptors." These receptors specialize in detecting odor molecules. Using different combinations of more than 300 olfactory receptors, humans can detect thousands of different scents. The types of olfactory receptors you have determine what odors you can or cannot smell.



Keep exploring your Traits results.

Contribute
Join the research effort and contribute to new discoveries.

Compare
Compare your results to your family and friends.

Discuss
Join the discussion with other 23andMe customers interested in Traits.

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Scientific Details

We use one of two different methods to calculate your trait results.

Statistical Model

Most traits are influenced by many different factors, including genetics, lifestyle, and environment. Usually, a statistical model using many factors provides better predictions than looking at single factors by themselves. To develop our models, we first identify genetic markers associated with a trait using data from tens of thousands of 23andMe customers who have consented to research. Then, we use statistical methods to generate a "score" for that trait using your genotype at the relevant genetic markers as well as your age and sex. We predict your likelihood of having different versions of the trait based on the survey responses of 23andMe customers with similar scores. These predictions apply best to customers who are of the same ethnicity as the people whose data contributed to the model. The accuracy of these predictions varies from trait to trait.

Read more about our statistical methodology

Curated Model

For some traits, just a few genetic markers can strongly predict whether a person will have a particular version of the trait. For curated models, we first evaluate published scientific studies to identify genetic markers with well-established associations with the trait. Then, we look at genetic and survey data from tens of thousands of 23andMe customers who have consented to research. We estimate your likelihood of having different versions of the trait based on survey responses from customers who are genetically similar to you at those markers. These results apply best to customers who are of the same ethnicity as the people whose data contributed to the predictions.

About your Asparagus Odor Detection result

Your result for this trait was calculated using a **curated model**.

Variants Detected | View All Tested Markers

Marker Tested	Genotype*			Additional Information
rs4481887 **Gene:** Near OR2M7 **Marker:** rs4481887	**A** Variant copy from one of your parents		**G** Typical copy from your other parent	**Biological explanation** **Typical vs. variant DNA sequence(s)** **Percent of 23andMe customers with variant** **References** [2, 8]

*This test cannot distinguish which copy you received from which parent. This test also cannot determine whether multiple variants, if detected, were inherited from only one parent or from both parents. This may impact how these variants are passed down.

23andMe always reports genotypes based on the "positive" strand of the human genome reference sequence (build 37). Other sources sometimes report genotypes using the opposite strand.

References

1. Bushdid C et al. (2014). "Humans can discriminate more than 1 trillion olfactory stimuli." Science. 343(6177):1370-2.
2. Eriksson N et al. (2010). "Web-based, participant-driven studies yield novel genetic associations for common traits." PLoS Genet. 6(6):e1000993.
3. Lison, M et al. (1980). "A Polymorphism of the Ability to Smell Urinary Metabolites of Asparagus." Br Med J 281 (6256):1676-78.
4. Logan DW (2014). "Do you smell what I smell? Genetic variation in olfactory perception." Biochem Soc Trans. 42(4):861-5.
5. Malnic B et al. (2004). "The human olfactory receptor gene family." Proc Natl Acad Sci U S A. 101(8):2584-9.
6. Mitchell SC. (1987). "Odorous Urine Following Asparagus Ingestion in Man." Experientia 43(4):382-3.
7. Mitchell SC. (2001). "Food Idiosyncrasies: Beetroot and Asparagus." Drug Metab Dispos. 29(4 Pt 2):539-43.
8. Pelchat ML et al. (2011). "Excretion and perception of a characteristic odor in urine after asparagus ingestion: a psychophysical and genetic study." Chem Senses. 36(1):9-17.
9. Weimer B et al. (1999). "Sulfur metabolism in bacteria associated with cheese." Antonie Van Leeuwenhoek. 76(1-4):247-61.

Change Log

Your report may occasionally be updated based on new information. This Change Log describes updates and revisions to this report.

Date	Change
Jan. 17, 2018	Asparagus Odor Detection report updated with revised content and design. Additionally, as part of regular report review and improvements in data analysis, customers of African American or East Asian descent may see an updated result.
June 22, 2017	Asparagus Odor Detection report separated from the Taste and Smell report.
May 12, 2016	Customers with a "Not Determined" genotype for a genetic marker used for Asparagus Odor Detection previously received a result based on the typical genotype for that marker. These customers will now receive a "Not Determined" result.
Oct. 21, 2015	Taste and Smell report created.