

Taste test: Could sense of taste affect length of life?

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fruit fly

Perhaps one of the keys to good health isn't just what you eat but how you taste it. Taste buds – yes, the same ones you may blame for that sweet tooth or French fry craving – may in fact have a powerful role in a long and healthy life – at least for fruit flies, say two new studies that appear in the *Proceedings of the National Academy of Sciences* of the United States of America.

Researchers from the University of Michigan, Wayne State University and Friedrich Miescher Institute for Biomedical Research in Switzerland found that suppressing the animal's ability to taste its food –regardless of how much it actually eats – can significantly increase or decrease its length of life and potentially promote healthy aging.

Bitter tastes could have negative effects on lifespan, sweet tastes had positive effects, and the ability to taste water had the most significant impact – flies that could not taste water lived up to 43% longer than other flies. The findings suggest that in fruit flies, the loss of taste may cause physiological changes to help the body adapt to the perception that it's not getting adequate nutrients.

In the case of flies whose loss of water taste led to a longer life, authors say the animals may attempt to compensate for a perceived water shortage by storing greater amounts of fat and subsequently using these fat stores to produce water internally. Further studies are planned to better explore how and why bitter and sweet tastes affect aging.

"This brings us further understanding about how sensory perception affects health. It turns out that [taste buds](#) are doing more than we think," says senior author of the University of Michigan-led study Scott Pletcher, Ph.D., associate professor in the Department of Molecular and Integrative Physiology and research associate professor at the Institute of Gerontology.

"We know they're able to help us avoid or be attracted to certain foods but in [fruit flies](#), it appears that taste may also have a very profound effect on the physiological state and healthy aging."

Pletcher conducted the study with lead author Michael Waterson, a Ph.D graduate student in U-M's Cellular and Molecular Biology Program.

"Our world is shaped by our sensory abilities that help us navigate our surroundings and by dissecting how this affects aging, we can lay the groundwork for new ideas to improve our health," says senior author of the other study, Joy Alcedo, Ph.D, assistant professor in the Department of Biological Sciences at Wayne State University, formerly of the Friedrich Miescher Institute for Biomedical Research in Switzerland.

Alcedo conducted the research with lead author Ivan Ostojic, Ph.D., of the Friedrich Miescher Institute for Biomedical Research in Switzerland.

Recent studies suggest that sensory perception may influence health-related characteristics such as athletic performance, type II diabetes, and aging. The two new studies, however, provide the first detailed look into the role of taste perception.

"These findings help us better understand the influence of sensory signals, which we now know not only tune an organism into its environment but also cause substantial changes in physiology that affect overall health and longevity," Waterson says. "We need further studies to help us apply this knowledge to health in humans potentially through tailored diets favoring certain tastes or even pharmaceutical compounds that target [taste](#) inputs without diet alterations."

More information: Positive and negative gustatory inputs affect *Drosophila* lifespan partly in parallel to dFOXO transcription factor, *PNAS*, www.pnas.org/cgi/doi/10.1073/pnas.1315466111

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