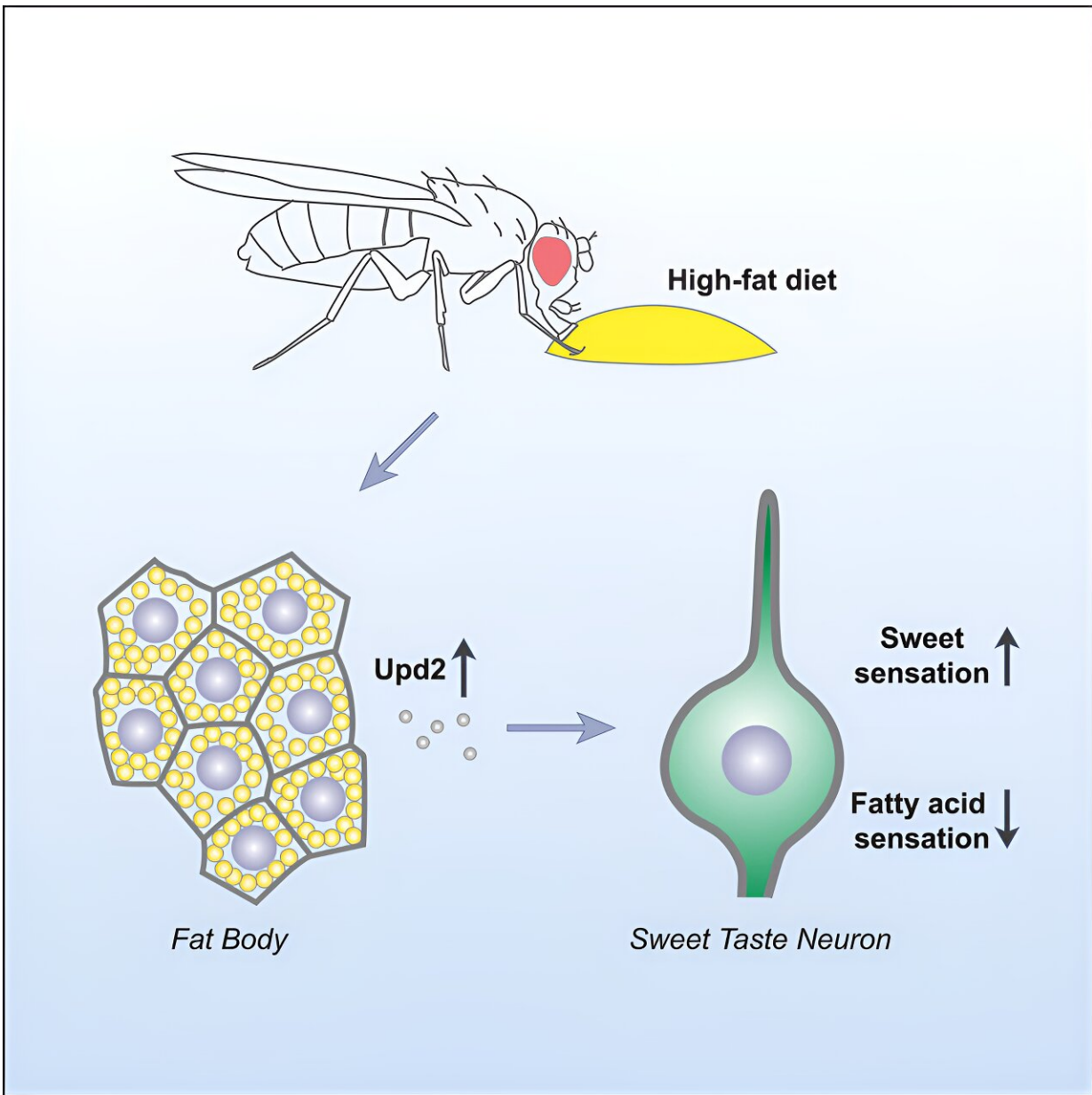


Sugar boosts cravings for fat, *Drosophila* study finds

November 24 2023, by Sara-Lena Brännström



Graphical abstract. Credit: *Cell Reports* (2023). DOI: 10.1016/j.celrep.2023.113387

People are eating too much sugar, and research increasingly suggests it is not just impacting metabolism, but also altering the perception of taste. Mattias Alenius' research team at Umeå University discovered that sugar overconsumption triggers an increased desire for fat in flies.

Their recent study, [published in the journal *Cell Reports*](#), unveils a fascinating link: fat and sugar intake wield influence over each other. While the study was conducted on [fruit flies](#), it's possible that similar mechanisms exist in humans.

"Too much sugar reduces sweet cravings but amps up [fat intake](#), and vice versa. This ensures flies get enough sugar and fat as nutrients," explains Mattias Alenius, Professor at the Department of Molecular Biology.

Previously, the team found that even a slight increase in [dietary sugar](#) prompts the fly gut to release a hormone called Hedgehog into circulation. This reduces sugar response in taste cells, causing flies to opt for non-sweet foods. Their latest study reveals Hedgehog not only dampens sugar cravings but also boosts the desire for fat.

Tracking the signal driving the desire for more fat led researchers to a central fat regulator found in both mice and flies: leptin, known as Upd2 in flies. As fat tissue increases in flies, Upd2 is released, suppressing the perception of fat taste while intensifying cravings for sweetness. Thus, the interplay between fat and sugar intake is mutually regulated by Hedgehog and Upd2 signals.

"It's a tug-of-war between sugar and fat—not a restriction of total

calories, as we would prefer. Presumably, humans have similar compensation mechanisms to flies, which means that we prefer to have as much fat as [sugar](#). An American cheesecake is usually said to be the best way to drive our desire to eat," says Mattias Alenius.

"We humans perceive fat as a [taste](#), and it remains to be seen if these research findings apply also to us. Food for thought in further research."

More information: Yunpo Zhao et al, Fat- and sugar-induced signals regulate sweet and fat taste perception in *Drosophila*, *Cell Reports* (2023). [DOI: 10.1016/j.celrep.2023.113387](https://doi.org/10.1016/j.celrep.2023.113387)

Provided by Umea University

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