Taste Deviation in Juvenile Obesity, and its Effect on Food Choice

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NEED
Obesity is one of the top public health concerns in the United States and is responsible for more than 300,000 deaths per year. Tackling obesity early is key to solving this health crisis, and this project offers new insights into the onset of obesity. As people become obese, their sense of taste guides them toward less healthy food. This project studies how obesity affects the developing sense of taste, using behavioral studies and molecular work with taste buds. This project aims to fill the gap of much-needed research on the early stages of obesity.

APPROACH
Robin Dando and his team monitored the behavior of mice raised on unhealthy diets versus a controlled diet, and groups with mothers consuming an unhealthy diet versus controlled. To monitor how various receptors in taste buds vary with treatments, the team used molecular biology techniques and genomic sequencing to back up behavioral observations. Structural changes to the taste buds were also examined using fluorescent microscopy to measure the effects of the diet of both the offspring and mother.

IMPACT
As the mice were tracked behaviorally as they aged, research showed there were notable differences in food response in adulthood between those fed an unhealthy diet versus a control diet. In addition, mice fed sugar/sucralose did not show some of the defects in taste response demonstrated by other groups in response to the artificial sweetener acesulfame K. This may have been an artifact in the other group’s results of the ad-lib feeding schedule, meaning that mice consumed about 50 times more than a realistic human diet. Taste bud mRNA was collected and tested for altered expression of taste markers and the results supported behavioral recordings. Finally, taste buds were collected from all groups of mice for morphological examination which will also result in an additional follow-up paper.

Related Information: The Dando Taste Physiology Lab