Feeding responses of different mouse strains to sucrose: effects of experience

We examined the feeding responses of two inbred strains of mice (B6 and 129) to sucrose. Mice from the B6 strain consume more sucrose than mice from 129 strain during 24 hr feeding tests. This strain difference is due in part to the fact that each strain expresses a different form of the \textit{Tas1r3} gene, which codes for the sweet taste receptor called T1R3. The T1R3 receptor in B6 mice has greater binding affinity for sugars. We hypothesized that feeding experience with sugars would cause both strains mice to consume sucrose more avidly. To this end, we compared the licking responses of mice to sucrose before and after three days of exposure to a concentrated sucrose solution. We focused on short-term licking responses because they are known to provide a more accurate measure of the taste-mediated component of the feeding response. We found that sucrose exposure caused the 129 mice to lick more vigorously for sucrose, but caused the B6 mice to lick less vigorously for sucrose. Future research will focus on possible physiological mechanisms to explain why each strain responded so differently to sucrose exposure. (Research conducted by Tiffany Lambert and Rotsen Rocha.)