found that these compounds bind primarily to the transmembrane domain of T1r2, unlike many hydrophilic sweetening compounds that bind to the ligand-binding domain of T1r2. These experimental results not only suggest the existence of a new binding mechanism for T1r2/T1r3, but also suggest new applications for aroma compounds that affect food preferences, including both taste and smell.

P219 Taste perception of salt substitute in the brain: preliminary EEG findings

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The increasing prevalence of hypertension and cardiovascular diseases has prompted a search for dietary strategies that can reduce sodium intake without compromising taste. Potassium chloride (KCl) is widely used as a salt substitute, despite its bitter aftertaste. This study investigated how the brain perceives these substitutes compared to salt. Throughout the sensory evaluation of saltiness (n=49), a low concentration of 0.1 M NaCl was found to be equivalent to a mixture of 0.07 M NaCl and 0.06 M KCl, and a high concentration of 0.3 M NaCl was equivalent to a mixture of 0.21 M NaCl with 0.11 M KCl. We analyzed brain activity and connectivity (n=10) exposed to these four salt solutions using a 256-channel EEG system. At lower concentrations, salty and bitter tastes did not differ significantly between the NaCl and NaCl + KCl mixtures. At higher concentrations, the NaCl + KCl mixture had a significantly higher bitter taste without affecting saltiness. Brain activity, measured by insula and OFC spectral power, showed no significant differences at any concentration. However, higher concentration increased insula-OFC connectivity in the mixture, suggesting a heightened neural processing of the complex taste profile. This enhanced connectivity, involving the OFC-key regions for reward and aversion-indicates a refined integration of sensory informatio' that could reflect the brain's evaluation of the increased bitterness as an aversive stimulus. Our findings underscore the importance of considering the neural basis of taste perception in developing dietary strategies aimed at reducing sodium intake without diminishing taste satisfaction.

P220 Electrophysiological features across neuronal types in the primary olfactory center of the insect brain

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The noctuid moth, *Helicoverpa armigera*, relies heavily on its sense of smell for feeding, mate-finding, and oviposition behaviors. The primary olfactory center, called the antennal lobe, contains numerous neuronal types and sub-types partaking in the facilitation of these behaviors. Understanding the morphological and electrophysiological features of these neurons is of particular interest, especially with respect to the various types of projection neurons and local interneurons. The projection neurons send signals to higher-order regions associated with memory formation, valence assessment, and innate behaviors, while the local interneurons modulate and sharpen information processing in the antennal lobe and thereby indirectly affect downstream processing.

Here, we present unpublished findings related to the electrophysiological features of projection neurons which send information via five distinct pathways to protocerebral output regions, as well as the antennal lobe local interneurons. We performed *in vivo* sharp intracellular recording and labelling, while stimulating

the moth with various pheromones and plant-associated odorants. Our analyses include across-category comparisons of stimulus-response features as well as parameters relating to spontaneous activity patterns and biophysical properties of various projection neurons and local interneurons.

P221 The palate palette: unraveling the effect of savoury taste phenotypes on food acceptance, consumption and nutritional status by gender

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The present study explored the effect of taste responsiveness on eating habits and nutritional status by gender. Two-thousand-eight-hundred-seventy-eight volunteers (54.5% F; age: 18–60y) rated liking and perceived intensity of 3 sensations (salty, umami and overall flavor) for a model food spiked with 4 increasing levels of NaCl. Individuals self-reported anthropometric information and consumption data for a series of food. K-means clustering performed by gender on Pearson's coefficients between liking and responsiveness to the target sensations revealed, for women, 'Savoury-taste-Likers' (n=698) and 'Savoury-taste-Dislikers' (n=872) phenotypes for which liking, respectively, increased or decreased along with NaCl concentration. For men, 'Savoury-taste-Dislikers' (n=838) and 'Savoury-taste-Lovers' phenotypes (n=470) were found, the latter showing the highest liking scores for the saltiest foods. In women, the 'Likers' phenotype was characterized by a lower sensitivity to salty, umami and overall flavour than the 'Dislikers' phenotype, while in men this association was less pronounced. Both 'Likers' and 'Lovers' phenotypes (irrespective of gender) displayed a higher consumption frequency of caloric meals or junk foods, red and cured meat and both saturated and unsaturated fats, yet only the 'Savoury-taste-Lovers' phenotype was associated with increased BMI. These data highlight the importance of taste as explanatory variable in the development of unhealthy eating patterns and stress the need of considering gender-related differences for the implementation of personalized dietary interventions.

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P222 Sweet off-response in type III taste cells

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Type III cells in the taste buds are known for encoding sour taste, as well as other chemical modalities such as carbonation, saltiness, water taste, and etc. Here we report a novel functional role of type III cells in encoding of sweet off-response. Using in vivo functional imaging of genetically-targeted type III cells in fungiform taste buds, we observed that a subpopulation of sour-sensing type III cells exhibits calcium activity in response to sweet offset, but not the onset, amidst the termination of prolonged sweet stimuli. Pharmacological inhibition experiments suggested that sweeteners may hyperpolarize type III cells. Following washout of the sweetener may cause rebound potential via t type voltage gated calcium