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Articles Highlighted

Taste Preferences of FHH-Chr n^{BN} Consomic Rats

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Although extensive behavioral and physiologic work examined establishment of taste preferences in the rat, comparatively little has been done to elucidate the underlying genetic basis. Previously, such work mostly relied on the comparison of intake data across inbred strains of mice. Tordoff now reports on the use of consomic rats to identify chromosomes that carry genes responsible for taste preferences. Consomic rats are chromosome substitution strains in which an entire chromosome of a parental donor strain is introgressed into the isogenic background of another inbred strain. Thus, phenotypic differences between the consomic and recipient strains can be assigned to genes of the donor chromosome. In his behavioral experiments, the author used 16 taste solutions for which he previously found large differences in consumption between the parental strains, Brown Norway and fawn-hooded Hypertensive rats. The author now found that almost all chromosomes affected the consumption of the taste solutions and that up to 16 participated in a response. Only few of the identified chromosomes carried genes encoding taste-signaling proteins, suggesting that the establishment of taste preferences is far more complex than previously anticipated.

T Cells in Peripheral Taste Tissue

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Taste disorders impair quality of life and nutrition and appear frequently associated with various inflammatory states. Normal human epithelium and lamina propria of fungiform papillae contain various immune cells including dentritic cells, CD4 T cells, few macrophages, and B-lymphocytes that are thought to play a role in the defense of taste tissue. Feng et al. now investigated the identity and distribution of the major T-cell subtypes by immunohistochemical methods in healthy human fungiform tissue. They found that T-helper 1 cells were more prominent than T helper 2 cells. Memory T cells were also present. Whereas epithelial lymphocytes were of the γ/δ type, those of the lamina propria were of the α/β type. Regulatory T cells were observed at low levels. The fungiform immune cells are expected to protect the gustatory system from inflammation and infections and could be involved in taste alteration during these disease states.

Output Information from the 3 Macroglomerular Units in a Heliothine Moth

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Investigations of pheromone action in insects are important because they link chemosensory and neural mechanisms to clear stereotyped behaviors. The oriental moth *Helicoverpa assulta* differs from other heliothine species by using a different pheromone blend. This difference is accompanied by alterations of the male-specific olfactory pathway in this species. Male moths show an unusual distribution of 2 sensilla categories and a particular anatomical arrangement of the male-specific glomeruli forming the macroglomerular complex. These anatomical variations raise the question if the 3 units of the macroglomerular complex of this species process the same type of information as their counterparts of the other heliothine species. Zhao and Berg approached this question by intracellular recordings and fluorescent staining techniques in combination with confocal microscopy. Their data show that projection neurons that responded to the primary species-specific pheromone component had extensive arborizations in the cumulus part of the macroglomerular complex. This observation confirms the general principle that this structure processes information about the primary pheromone compound in heliothine species, irrespective of compound identity. A comparable number of neurons, which were sensitive to the interspecific pheromone component, arborized in the dorsomedial compartment of the macroglomerular complex. A third neuron type that was activated by the secondary principal pheromone compound of this species arborized in the third, that is, the ventral compartment of the macroglomerular complex. Thus, the study uncovered the functional specificity of the glomeruli in the macroglomerular complex of *H. assulta*, and the presented data have important implications for divergent male-specific olfactory characteristics related to speciation.

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