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Articles Highlighted

Basis of residual responsiveness to acids in "taste-blind" mice

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Mice with null alleles for the P2X2 and P2X3 purinergic receptors are devoid of responses to all taste qualities in the lingual gustatory nerves and lack taste-related behaviors but avoidance of acids. To find a basis for this inconsistency Ohkuri *et al* now investigated taste-induced responses in the superior laryngeal nerve of wild type and P2X2/P2X3 double knockout mice. As expected, the superior laryngeal nerve responded well to a number of prototypical sweet, umami, and bitter stimuli in wild type mice, whereas responses were not seen in knockout mice. However, in both types of mice this nerve responded with little variation to acidic stimuli, although sour-responsiveness was lost in the chorda tympani and glossopharyngeal nerves of the gene-targeted animals. These results are consistent with the fact that the superior laryngeal nerve carries responses from taste buds and free nerve endings. From their data the authors conclude that the avoidance of acids in the P2X2/P2X3 double knockout mice is based on chemosensitivity of nerve fibers innervating the laryngeal epithelium and not on gustatory transmission.

Genetics of smelling musky odors

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People with otherwise normal sense of smell can differ in their ability to smell certain odors. Such individual differences could be explained by deleterious alleles of particularly narrowly tuned olfactory receptors (OR). However, the current evidence is only partially supportive. For instance, alleles of the gene for *OR7D4* explain only 39% of the variance in smelling androstenone suggesting the existence of additional mechanisms. To address the point further Knaapila *et al* assessed heritability of smelling six odorants. Only for two musky odorants, androstenone and Galaxolide, heritability could actually be demonstrated proposing strongly that perceptual variation in smelling is not always heritable. Genome-wide association study further revealed closest association between ratings for androstenone and an SNP in a genomic region devoid of *OR* genes. Only specific typing confirmed the known association of *OR7D4* with the ability to smell androstenone sensitively. Both results have been replicated in a second independent sample of subjects. These data suggest that perception of androstenone is influenced by OR7D4 but probably also by other unidentified gene variants.

A third type of organization of the accessory olfactory system in the Tammar Wallaby?

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The mammalian accessory olfactory system shows two types of organization. In the segregated type apical neurons of the sensory epithelium of the vomeronasal organ express vomeronasal 1 receptors (V1R) and the G protein subunit Giα2 whereas the basal neurons coexpress vomeronasal 2 receptors (V2R) and Goα. Moreover, both neuron types send their axons to distinct parts of the accessory olfactory bulb (AOB), i.e., the V1R expressing neurons to the rostral part and the V2R expressing neurons to the caudal part of the vomeronasal nerve cell layer. In the uniform type only Giα2 and V1Rs are expressed throughout the vomeronasal sensory epithelium and axonal projections are scattered in the AOB. Schneider *et al* now observed that the Tammar Wallaby, a marsupial, like mouse, express Goα in basal vomeronasal sensory neurons. They project to all areas of the of the vomeronasal nerve cell layer in the AOB without any regional restrictions and not only to the rostral area. So far this projection pattern is unique for the tammar. Based on their observations the authors propose the existence of a third type of organization of the vomeronasal system which is intermediate to the segregated and uniform types.

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