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Articles highlighted

Olfactory impairment in an adult population

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Olfactory impairment has been found to be common, particularly in elderly people. Because the sense of smell is crucial for the appreciation of the flavor of foods, the scents of flowers, perfumes and other consumer goods as well as the recognition of environmental hazards, deficits in smelling can potentially impair the quality of life. By means of the San Diego Odor Identification Test Schubert et al tested olfactory performance in participants in the Beaver Dam Offspring Study, an ongoing population-based longitudinal study of age-related sensory disorders in adults aged 21–84 years but who were primarily middle-aged. In the study population of almost 3000 subjects the average prevalence of olfactory impairment was 3.8%, more common in men, and increased with age from 0.6% in those aged 21–35 years to 13.9% in the group of people ≥65 years. Nasal polyps, deviated septum, ankle-brachial index <0.9, and smoking in women increased whereas higher household income decreased odds of olfactory impairment. Subjects with olfactory impairments reported lesser appreciation of the flavor of food but the authors found no association of olfactory impairment with dietary choices, depressive symptoms or quality of life.

Salamander type-2 vomeronasal receptors

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The complexity of olfactory organs and olfactory receptors vary across vertebrate species. For example whereas most fish possess only a single olfactory organ, mammals display distinctions such as the major olfactory epithelium (MOE) and the vomeronasal organ (VNO). Amphibians as first tetrapodes may be therefore crucial for understanding the development of olfactory subsystems. However, most of the available information about the functional organization of amphibian olfactory systems is based on investigations of few model aquatic anuran species, yet differences could be present between aquatic and terrestrial species as well as between anurans and *Caudata*. Kiemnec-Tyburczy et al isolated type-2 vomeronasal receptors (V2Rs) from a salamander and compared them with other vertebrate V2Rs. They identified 5 subfamilies of salamander V2Rs. Most of the sequences were similar to those of mouse subfamilies A, B, and D while 2 clustered with sequences from aquatic anuran species. None showed highest similarity to fish V2Rs. No homolog to members of mouse subfamily C was found. Expression of salamander V2Rs was confined to the VNO, as was that of the vomeronasal signaling molecule, transient receptor potential channel C2. Expression of some but not all V2Rs was sexually dimorphic. Transcripts for the olfactory guanine-nucleotide-binding regulatory protein alpha$_{olf}$, unlike those of the former polypeptides, were present in both the MOE and VNO. Based on these data the authors conclude that some aspects of expression of V2R and olfactory signaling molecules differ between salamander and frogs as well as between salamander and mouse.

Projections sites of crypt cells in Zebrafish

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The single olfactory epithelium of Zebrafish contains 3 types of olfactory receptor neurons (ORN), i.e., ciliated, microvillous, and crypt cells. Whereas ciliated cells project to the dorsal and medial bulbar regions, microvillous cells project to the lateral region of the olfactory bulb. Gayoso et al now examined by administration of dye tracer to bulbar regions the projection site of third population of ORN, i.e. the crypt cells. They found that these enigmatic cells differ from the bipolar ORN by mainly sending their fibers to the dorsomedial, not the dorsolateral glomerular field. Tracing from mitral cells contacting these dorsal glomerular fields revealed that also the projections to the ventral telencephalon differs. Retrograde tracing from the ventrolateral supracommissural region, which is the projection site of mitral cells in the dorsomedial glomerular field, in turn identified 2 large glomeruli in the dorsomedial bulbar region. Thus, based on their neuroanatomical data the authors propose the existence of a crypt cell specific olfactory subsystem in Zebrafish.

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