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Structural Organization and Functional Aspects of the Olfactory Epithelium of Red-bellied Piranha, *Pygocentrus nattereri* (kner, 1858)

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Abstract

Olfaction plays a momentous role in various life activities of fish. The olfactory organ of teleost is the only vertebrate organ in which nerve cells are directly exposed to the aquatic ecosystem. In fishes the receptor cells of the sensory epithelium are stimulated when they come into contact with certain chemicals carried in water. The present study describes the distribution and characterization of various cells lining the olfactory epithelium of *Pygocentrus nattereri* by light as well as scanning and transmission electron microscopy. The oval shaped olfactory rosette contains 28 ± 2 primary lamellae on each side of the median raphe, lodges on the floor of olfactory chamber. The olfactory chamber communicates externally by anterior and posterior nasal openings. The olfactory lamellae are composed of sensory and non-sensory epithelium in the different regions. The sensory epithelium is confined in the upper half of the lamella including tongue shaped area while the non-sensory epithelium is observed resting portion of the lamella. The sensory epithelium contains morphologically distinct ciliated and microvillous receptor cells, supporting cells and basal cells. The non-sensory epithelium is comprised of labyrinth cells, mucous cells and stratified epithelial cells. According to transmission electron microscopical observation elongated rod shaped structure emerging out from dendrite end of the receptor cells in the free epithelial surface. The supporting cells have lobular nucleus

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