

## **P5.31.**

### **Is serotonin a pivotal modulator in the snail olfactory center?**

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A high number of signal molecules, including serotonin (5-HT), were demonstrated to participate in olfactory processes of terrestrial snails. In the procerebrum (PC), which is the site of central olfactory processing, 5-HT was shown to up-regulate oscillation frequency and influence odor learning capability, meanwhile odor stimuli evoked 5-HT concentration changes. Therefore, we have studied the neuroanatomical background of the 5-HTergic innervation of the PC of *Helix pomatia*, applying light- and electron microscopic immunocytochemistry. The PC was found to be supplied with a dense network of 5-HT immunoreactive fibers of extrinsic origin, displaying different organization patterns in the distinct anatomical subdivisions. A perisomatic basket-like innervation was characteristic for the cell body layer, meanwhile varicose fiber systems of varying density occurred in the different neuropil regions. At ultrastructural level, labeled varicosities were found to contact the cell bodies, as well as axon profiles both in the local neuropils of the cell body layer and in the main, terminal and internal, neuropil areas. The immunoreaction was mostly bound to axons and varicosities containing large electron dense granules. Our findings are the first morphological evidence for the involvement of 5-HT in intercellular contacts in the PC, suggesting its decisive modulatory role in the regulation of cellular activities at different levels of olfactory processing.

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