

第343回 大阪大学神経科学懇話会

日時：平成29年5月11日（木） 17:30 – 18:30

場所：共同研究棟 7階 セミナー会議室

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演題：Gustatory second-order neurons that convey sugar taste information to the feeding/reward systems in *Drosophila*

Sugar stimuli detected by the gustatory system serve as reward cues for associative learning as well as triggers for immediate feeding behaviors. In *Drosophila*, previous studies identified gustatory sensory neurons (GSNs) that relay taste information to distinct subregions (primary gustatory center; PGC) in the brain. However, little is known about neural circuitry immediately following the GSNs. To identify such neurons, here we conducted an anatomical screen of more than 5,000 GAL4 strains, each of which genetically labels a specific subpopulation of neurons. After we obtained 32 candidate lines that label neurons whose dendrites innervate the PGC, we conducted a secondary screen using the GRASP (GFP reconstitution across synaptic partners) technique, which visualizes potential contacts between the dendrites of the candidate neurons and axonal terminals of sucrose-sensitive GSNs. Finally, we identified 18 strains labeling 15 types of gustatory second-order neurons (G2N-1 - 15). Each type of G2N distributes its output synapses in discrete brain regions, suggesting these regions may participate in higher gustatory processing. Further, we investigated whether the identified G2Ns connect to neural circuits involved in taste-related behaviors. Among the 15 candidate G2Ns, seven types send neural fibers to the putative dendritic region of feeding command neurons, which trigger a series of feeding behaviors upon appetitive stimulation. Four types of G2Ns project to the input regions of octopaminergic neurons, which reportedly convey reward signals necessary for associative olfactory learning. These observations suggest that the G2Ns may convey information for direct feeding behavior or associative memory. Our results provide ways to genetically manipulate G2Ns for live-imaging and behavioral assays, which should reveal the information processing pathways required for appropriate control of the gustatory-motor and -reward systems.

※セミナーは日本語で行います

※本講演は、医科学修士課程系別セミナーとして単位が認定されます

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