

S01-4 **Structural basis of external nutrients sensing by taste receptor**

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Taste receptor Type 1 (T1r) serves as receptors for various nutrients, such as sugars and amino acids, in foods. Recently, T1r is known to be involved not only in taste perception in the oral cavity, but also in the secretion of hormones or regulation of innate immune systems in various organs and tissues in the living body. T1r proteins are members of class C G-protein coupled receptor family, and percept major ligands at the ligand binding domains (LBDs) at the extracellular side. In contrast to the receptors for endogenous signaling molecules as hormones and neurotransmitters, generally exhibiting strict ligand specificities, taste perception needs to recognize a wide array of chemical substances in the environment by a limited number of receptors. To achieve this, taste receptors, including T1rs, often show broad ligand specificities.

So far, structural analysis of taste receptors has been hampered by difficulties in sample preparation. However, we recently succeeded to prepare the recombinant protein of T1r2a/T1r3LBD from medaka fish in a heterodimeric functional unit. We found that the receptor perceps variety of amino acids with different sizes and physicochemical properties, and solved the crystallographic structures of T1r2a/T1r3LBD in complex with various amino acids. In the symposium, the structural basis for recognition of diverse chemical substances yet inducing common receptor responses will be discussed.