



# **SAN2023**

**October 3<sup>rd</sup> - 7<sup>th</sup>**

**Universidad Nacional de San Luis  
San Luis - Argentina**

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## **214 | Decoding the Role of Homologous Metabotropic Glutamate Receptors MGL-1 and MGL-2 in Nutritional Perception of *C. elegans***

### **Neural Circuits and Systems Neuroscience**

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Unraveling the intricate neural circuits governing an animal's perception of its nutritional state is paramount. Here, we utilize *C. elegans* to shed light on these mechanisms. We concentrate on two neuronal G protein-coupled receptors (GPCRs), MGL-1 and MGL-2. These GPCRs have piqued our attention due to the high levels of autophagy exhibited by double mutants, a phenomenon characteristic of hungry animals, even in well-fed ones.

Similar to other species, hunger triggers heightened feeding rates in *C. elegans* upon encountering food. We found that well-fed *mgl-1; mgl-2* double mutants display elevated feeding rates, evident in increased pharyngeal pumping velocity and augmented gut food volume. Additionally, these well-fed animals exhibit reduced locomotion upon encountering food, a behavior akin to genuinely starved worms. This observation implies that these receptors perceive signals pertaining to the animal's nutritional status.

In addition, we unveil reduced feeding rates in *mgl-1* mutants, in contrast to heightened rates in *mgl-2* mutants. This disparity underscores the opposing effects of these receptors.

We are now focused on the neuronal circuits involved in nutritional sensing, while also elucidating the signals that activate these GPCRs.

The conservation of behavioral plasticity linked to nutritional states across the animal kingdom, underscores the potential universal relevance of our findings.