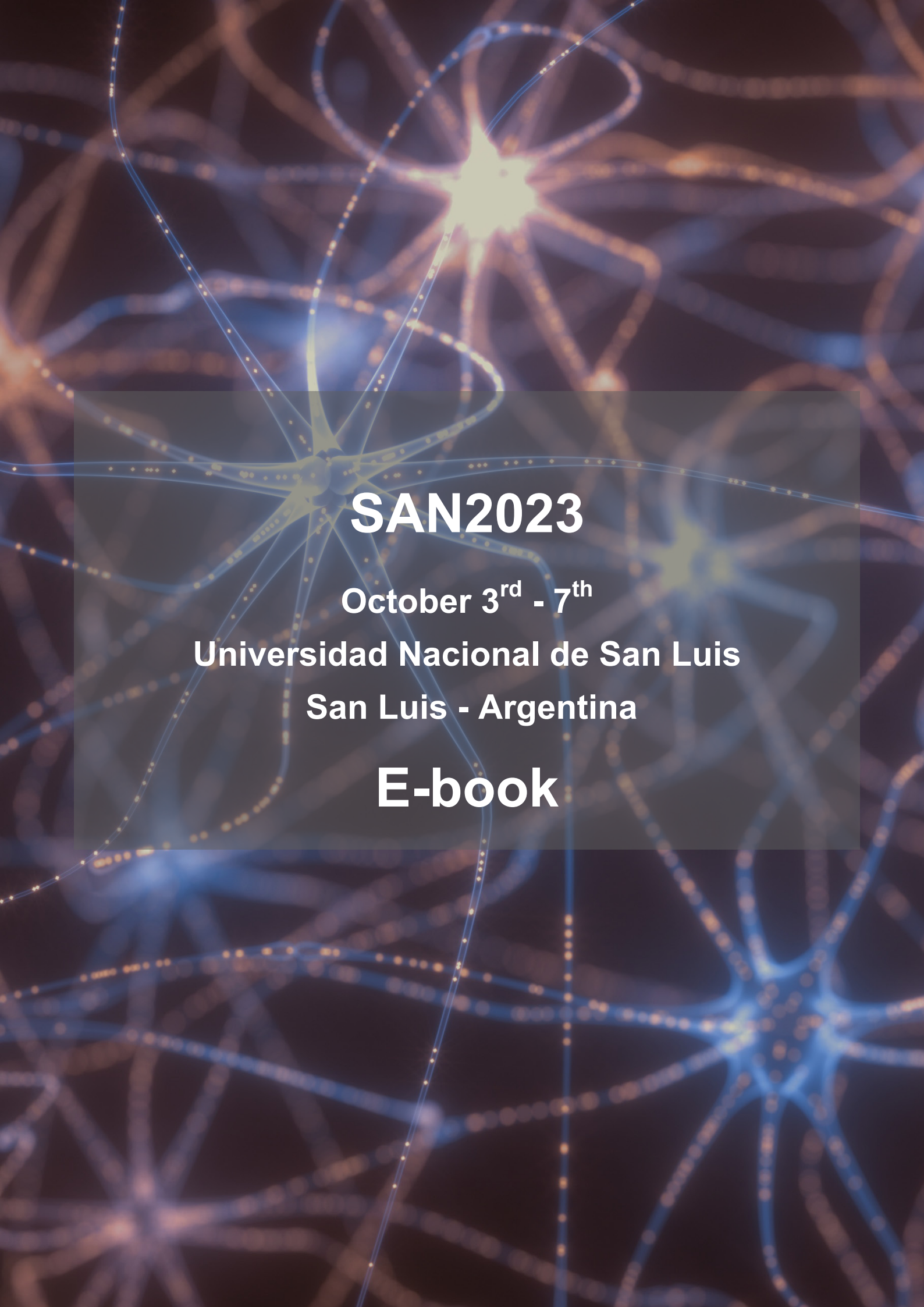

SAN2023

October 3rd - 7th

Universidad Nacional de San Luis

San Luis - Argentina

E-book

ORGANIZING COMMITTEE

Macarena Amigo Duran
Instituto de investigación en Biomedicina de Buenos Aires, IBioBA-CONICET-MPSP

Marta Antonelli
Instituto de Biología Celular y Neurociencia “Prof Dr. Eduardo De Robertis”

Ana Anzulovich
Facultad de Química, Bioquímica y Farmacia, UNSL- IMIBIO-SL, CONICET-UNSL

Ivanna Carla Castro-Pascual
Facultad de Química, Bioquímica y Farmacia, UNSL- IMIBIO-SL, CONICET-UNSL

Leandro Casiraghi
Laboratorio Interdisciplinario del Tiempo y la Experiencia (LITERA), Universidad de San Andrés

Noel Federman
Instituto de investigación en Biomedicina de Buenos Aires, IBioBA-CONICET-MPSP

Lucia Alba Ferrara
Estudios en Neurociencias y Sistemas Complejos, ENYS – CONICET – Hospital El Cruce Universidad Nacional Arturo Jauretche

Sol Ramos
Instituto de investigación en Biomedicina de Buenos Aires, IBioBA-CONICET-MPSP

Diego Rayes
Instituto de Investigaciones Bioquímicas de Bahía Blanca, INIBIBB-CONICET

Eliana Ruetti
Unidad de Neurobiología Aplicada (UNA), CEMIC-CONICET

Mariano Soiza Reilly
Instituto de Fisiología, Biología Molecular y Neurociencias (IFIBYNE, UBA-CONICET)

Lidia Szczupak
Instituto de Fisiología, Biología Molecular y Neurociencias (IFIBYNE, UBA-CONICET)

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

Author: Ailin Lacour | **Email:** ailin.lacour@gmail.com

Ailin Lacour [1°2°], Maria Gabriela Blanco [1°2°], Agustina Zabala [1°], Maria Jose De Rosa [1°2°], Rayes Diego [1°2°]

1° Instituto de Investigaciones Bioquímicas de Bahía Blanca (INIBIBB-CONICET)
2° Departamento de Biología, Bioquímica y Farmacia (UNS)

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.