



 **SAN**  
SOCIEDAD ARGENTINA DE  
INVESTIGACIÓN EN NEUROCIENCIAS

## XXIX ANNUAL MEETING AND SAN-ISN SMALL CONFERENCE AND COURSE

*"New mechanisms of neuro-glial interaction:  
Their contribution to nervous system development and repair"*



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Huerta Grande, Córdoba, Argentina

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## **P125.-Neuronal regulation of the stress response in *C. elegans*: Role of the neurotransmitter tyramine**

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Faced with physiological or environmental challenges, isolated cells and unicellular organisms can trigger the stress response autonomously. However, this response should be coordinated in multicellular organisms, as uncoordinated responses in individual cells may be harmful for survival. Recent studies in *C.elegans* showed that the systemic regulation of starvation and heat shock cellular responses depend on neurons which sense amino acids and ambient temperature, respectively. In both cases, the identity of the neurohormonal signalling that modulates these cellular responses are unknown. By analyzing the *C.elegans* neuronal wiring diagram we found that the circuits implied in both stress responses converge in one tyraminergeric neuron called RIM. We evaluated the heat shock and starvation resistance of *C.elegans* strains deficient on tyramine synthesis as well as in null mutants of the currently known tyramine receptors. We determined a higher stress resistance in these mutants compared with wild-type animals. We also quantified the lipid profile of these strains in the absence and presence of exogenous tyramine. Our results suggest that under prosperous conditions a basal level of tyramine is released but this signal must be repressed in order to mount a coordinated stress response when the environmental conditions become adverse. This study contributes to a better understanding of the neurohormonal signalling that controls the stress response in multicellular organisms.