

## **Neuronal activity in an amphibian brain during a spatial navigation task**

*Daneri, M. F. [1,3] & Muzio, R.N. [2,3]*

[1] INBIOSUR-CONICET, Bahia Blanca

[2] IBYME-CONICET, Buenos Aires

[3] Facultad de Psicología, Universidad de Buenos Aires, Buenos Aires

**Introduction:** Spatial navigation is a skill conserved between vertebrates, suggesting that it is important for survival. We are interested in the evolution of neural mechanisms that rule this ability, looking for learning patterns potentially present in a common ancestor. We use the terrestrial toad, *Rhinella arenarum*, as a model of ancient vertebrate. Amphibians have a homologous area to the hippocampal formation (brain structure involved in spatial learning) called medial pallium, which functions are not yet fully described. **Methods:** We trained toads in a water finding orientation task using a transparent open field (with access to visual extra maze cues). After acquisition, brains were analyzed using c-Fos immunohistochemistry technique. Expression of c-fos is an indirect marker of neuronal activity because it is often expressed when neurons fire action potentials. c-Fos is an immediate early gene (IEG) that codes for a transcription factor that is thought to mediate long-term changes in neural functioning. Thus, c-Fos staining in a neuron indicates recent activity and it is believed that increased c-Fos expression is induced by a novel experience, such as learning spatial task in a maze. **Results:** Our results revealed increased c-Fos + neurons in the medial pallium region. **Discussion:** The results obtained suggest that the medial pallium region is involved in spatial navigation strategies in amphibians. Hippocampus and medial pallium seems to be partially functional equivalents, telling us that this ability is evolutionary conserved.