

## Immunoreactivity and expression of synucleins in the South African clawed frog *Xenopus laevis* peripheral nervous system

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Human synucleins (syns) genes coding for  $\alpha$ -,  $\beta$ - and  $\gamma$ - isoforms are highly expressed in mammalian nervous system, in particular  $\alpha$ -syn is implicated in several neurodegenerative diseases collectively named synucleinopathies, including Parkinson's disease, frequently associated with motor impairment. The precise functions of syns remain elusive, but there are evidence indicating their involvement in the regulation of vesicular trafficking, exocytosis and synaptic function.

Because of the high degree of conservation of syns among vertebrates, non-mammalian animal models may provide additional information on the evolution and the physiological role of these proteins [1,2]. Preliminary data are here reported on  $\alpha$ - and  $\beta$ - syns expression and their morphological localization in different organs of adult specimens of the South African clawed frog *Xenopus laevis*, obtained by RT-qPCR, Western blot (WB) and immunohistochemistry (IHC). In WB and IHC experiments, two different commercial antibodies against mammalian  $\alpha$ -,  $\beta$ - syns were used. Alpha- and  $\beta$ -syn immunoreactivities were differently distributed in the various tissues analyzed. Interestingly  $\alpha$ -syn immunoreactivity was detected in both peripheral and autonomous nervous system respectively innervating skeletal muscles, cardiovascular system and gastrointestinal tract. Alpha-syn immunoreactive (IR) nerve fibers were found along skeletal muscle fibers, showing large varicosities typical of neuromuscular junctions. Moreover, both submucosal and myenteric plexuses of the gastrointestinal tract showed IR fibers. These preliminary observations suggest a conserved role for  $\alpha$ -syn in synaptic vesicle trafficking in peripheral nerves and suggest that *Xenopus laevis* may be a promising model for the study of synucleinopathies.

### References

- [1] Vaccaro et al. (2015) Localization of  $\alpha$ -synuclein in teleost central nervous system. *J Comp Neurol* 523: 1095-1124.  
 [2] Toni et al. (2016) Synuclein expression in the lizard *Anolis carolinensis*. *J Comp Physiol A Neuroethol Sens Neural Behav Physiol* 202(8): 577-95.

### Keywords

Synucleins, peripheral nervous system, *Xenopus laevis*