

Newts (*Cynops pyrrhogaster*) have high regenerative capacity in various parts of the body such as limbs, jaw, lens, heart, and brain. In mammals, the adult brain has the capacity of neurogenesis only in two parts of the cortex, the subventricular zone (SVZ) and the subgranular zone (SGZ). In contrast, the larval and adult newt brain have the potential of neurogenesis in all the parts of the brain which is rooted in a stem cell called ependymal cell which expresses the neural stem cell and the neural progenitor markers, SOX2, GFAP and Musashi-1.

When mesencephalic dopaminergic (mesDA) neurons are ablated using 6-hydroxy dopamine (6-OHDA), a selective neurotoxin of the DA neurons, mammals cannot regenerate DA neurons at all. In contrast, newts can regenerate mesDA neurons under the same condition.

In this study we analyzed the regenerating DA neurons in order to find the difference between regenerative and non-regenerative capacity by comparing mesDA neurons in newts and a frog, *Xenopus tropicalis*. Furthermore using the I-SceI method, we established transgenic newts that express modified RFP, tdTomato, under the *Xenopus tropicalis*-derived tyrosine hydroxylase (TH) promoter and are using them to attempt to visualize the regenerating DA neurons in vivo.