P1. EVOLUTION OF NEURONAL NOS GENE IN CNS OF FISH

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Nitric Oxide, a gaseous signaling molecule, is probably one of the oldest bio-regulatory elements playing key roles in metazoan physiology. In tetrapods, three Nos paralogs were described based on their expression profiles: two constitutive, namely the neuronal Nos (nNos) and the endothelial Nos (eNos), and one inducible Nos (iNos) involved in immune responses. In fish, due to the evolutionary tetraploidization and rediploidization events, the Nos repertoire results more complex. Indeed, differential loss of Nos gene duplicates have been involved in the generation of fish variability. Interestingly, the nNos gene has been maintained in a single copy and is considered the predominant source of NO in neurons. Expressed in several areas of the central and peripheral nervous systems, it participates in the elaboration of olfactory, visual and neuroendocrine stimuli. nNos promotes learning and memory and is involved in the control of adult CNS neurogenesis. Nos genes share a very similar genomic structure, but the open question is whether this conservation has also a functional meaning. In this work we investigate the nNos expression profile in three fish species that occupy key phylogenetic positions in the evolution and show a different Nos gene repertoire: Oryzias latipes (1 nNos), Danio rerio (1 nNos and 2 iNos (a/b), and Lepisosteus oculatus (1 nNos, 1 eNos and 1 iNos). Our results demonstrated that nNos expression profile increases in brain areas during the embryo development. Most remarkably, we identified homologous territories as well as specie-specific regions of nNOS expression in the CNS, suggesting a complex scenario.