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P6. NERVE GROWTH FACTOR IS EXPRESSED AND STORED IN BRAIN NEURONS OF ADULT ZEBRAFISH

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Nerve Growth Factor (NGF), a member of the neurotrophin family, was initially described as neuronal survival and growth factor, but successively has emerged as active mediator in the central nervous system of mammals. NGF is synthesized as precursor pro-NGF and is either secreted outside the cells or cleaved intracellularly into mature NGF. Despite the vast literature present in mammals, studies devoted to NGF in the brain of other animal models are scarce. Zebrafish is a teleost fish emerging as model for translational neuroscience research. Ngf organization is highly similar in zebrafish and mouse. Besides to mature NGF protein, two precursors are known in zebrafish. NGF mRNA was visualized by in situ hybridization on whole brains. NGF protein distribution was assessed on microtomic sections by using an antiserum against NGF which recognizes proNGF. To characterize NGF positive cells, anti NGF was employed on aromatase B transgenic zebrafish slides (where radial glial cells appeared fluorescent) and by means of double immunolabelling against NGF/PCNA (proliferation marker) and NGF/MAP2 (mature neuronal marker). NGF mRNA and protein were widely distributed in the brain of adult zebrafish and their distribution pattern was quite overlapping, both in males and females. MAP2 immunoreactivity was present in the majority of NGF positive cells, throughout the zebrafish brain. PCNA and aromatase B cells were not positive to NGF, but they were closely intermingled with NGF cells. In conclusion, our study demonstrated that mature neurons in the zebrafish brain express NGF mRNA and store proNGF.