

PCNA positivity in the mesencephalic matrix areas in the adult of a Teleost, *Carassius carassius* L.

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SUMMARY

Adult Teleosts still display karyokinetic activity involving also the central nervous system so that physiological neurogenesis does not cease when adult body size is reached but later. In the brain this is due to the persistence in several districts of neural type elements in the ependymal epithelium or in the area surrounding it, which combine to form *matrix zones* or *matrix areas*. These elements may undergo proliferative and/or maturational events, including also post-traumatic neurogenic events, either natural or experimentally induced, as a result of which the degree of brain plasticity is inferior only to that observed in the Amphibians. As part of our project of re-examining the matrix areas of normal adult heterothermic Vertebrates based on the use of a recent proliferative marker displaying the expression of the Proliferating Cellular Nuclear Antigen (PCNA). This is a reliable immunocytochemical test owing to its role in the cell cycle and to the ubiquity of PCNA due to the theoretical basis of the method, has now been applied to the mesencephalon of the Teleosts, which is the location of *matrix areas* that are absent in the Amphibians and Reptiles. The immunocytochemical patterns we observed in *Carassius carassius* displayed a much strong DNA synthesis activity than that we found in the telencephalon of the same specimens. These spontaneous neurogenic manifestations are not limited to the optic tectum, and are not restricted to the already well-known *caudal*, *ventral* and *dorsal matrix zones*. This evidence is discussed and compared with literature data describing the results of classical histologic, autoradiographic or immunocytochemical techniques under light and electron microscopy in various species of normal adult Teleosts or in specimens that had undergone reparative or regenerative processes after experimental intervention.