

## Analysis of morphogenetic potential of caudal spinal cord in *Triturus carnifex* adults (Urodele Amphibians) subjected to repeated tail amputations

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### SUMMARY

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The present research was aimed at testing whether the extraordinary morphogenetic and histogenetic potential exhibited in the regenerating new tail remains constant even after repeated amputation or whether it changes as a result of the mechanisms responsible for the regenerative process. Particular attention was focused on regeneration of the spinal cord and ganglia. For this purpose, tail regeneration in adult specimens of *Triturus carnifex* subjected to repeated amputation (up to 7 times) was compared with that of control animals subjected to a single amputation. Results show that although it slowed down the morphogenetic and differentiative phase, repeated amputation did not significantly alter either the morphogenetic or the histogenetic potential of the ependymal layer of the regenerating spinal cord. The latter result leads to hypothesized that the cells of the ependymal layer of the stump, which are responsible for the formation of the apical ampulla and the ependymal tubule inside the regenerative blastema, do not derive from undifferentiated reserve elements triggered after tail amputation but rather from differentiated ependymal elements that de-differentiate after the trauma and re-acquire embryonic potential. If this regeneration were actually to take place at the expense of the reserve elements, the continual regenerative processes induced by the repeated amputation would lead to the increasing depletion of these elements and a consequent reduction in regenerative capacity.