

Nerve-dependence and positional identity in amphibian limb regeneration

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Abstract:

Salamanders are able to regenerate their limbs after injury or limb loss. The regeneration of the limb proceeds by formation of a blastema, a mound of mesenchymal stem cells which accumulates under the wound epidermis at the end of the stump. The limb blastema is an autonomous structure and the mesenchymal stem cells are imprinted with the positional cues to restore the limb. We identified a cell surface protein called Prod 1 which is expressed in the adult newt limb in an exponential gradient and is implicated in positional identity. Recently we identified a secretory protein, newt Anterior Gradient (nAG), as potential ligand of Prod 1 and the candidate protein apparently mediates the nerve dependence of limb regeneration. Molecular, structural and functional characterisation of these two proteins are in progress.