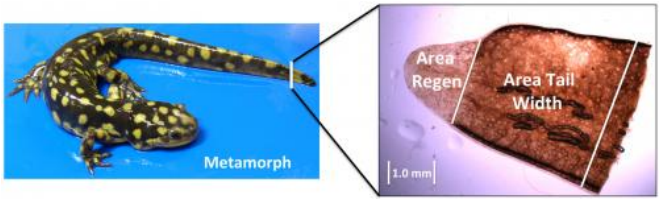
Genetic factors shaping salamander tails determine regeneration pace

3 July 2013



This is a representative tail tip that was sampled during the process of regeneration. Credit: *PLOS ONE* 8(7): e67274. doi:10.1371/journal.pone.0067274

Regeneration Is Associated with Genetic Factors That Determine Tail Morphology. *PLOS ONE* 8(7): e67274. doi:10.1371/journal.pone.0067274

Provided by Public Library of Science

Salamanders' capacity to regrow lost limbs may seem infinite when compared with that of humans, but even amongst salamanders, some species regenerate body parts very slowly, while others lose this capacity as they age. Now, researchers have found that salamanders' capacity to regrow a cut tail depends on several small regions of DNA in their genome that impact how wide the tail grows.

The results are published July 3 in the open access journal *PLOS ONE* by Randal Voss and colleagues from the University of Kentucky.

In the study, approximately 66-68% of the differences in regeneration among animals correlated with the width of their tails at the site of amputation. Molecular analysis revealed several genetic markers that had small, additive effects on the width of the tail, and thus contributed to the animals' regenerative capacity. Voss adds, "Our results show that regenerative outgrowth is regulated locally by factors at the site of injury. Although we do not know the nature of these local factors yet, our findings suggest they are distributed quantitatively along the length of the tail."

More information: Voss GJ, Kump DK, Walker JA, Voss SR (2013) Variation in Salamander Tail