

Regenerating lizard tails and stem cells

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Stem cells have enormous potential in health and medical research but to fully harness this potential, scientists are studying how stem cells transform, or differentiate. Caudal autotomy, is an antipredation strategy in lizards that depends on a complex array of environmental, individual, and species specific characteristics. These factors affect both when and how often caudal autotomy is employed, as well as its overall rate of success. The potential costs of autotomy must be weighed against the benefits of this strategy. Many species have evolved specialized behavioral and physiological adaptations to minimize or compensate for any negative consequences. One of the most important steps following a successful autotomous escape involves regeneration of the lost limb (Can we use autotomy for nerve cells regeneration in Human?). In some reptiles species, regeneration occurs rapidly; such swift regeneration illustrates the importance of an intact, functional tail in everyday experience. In lizards and other vertebrates, regeneration is a highly ordered process utilizing initial developmental programs as well as regeneration specific mechanisms to produce the correct types and pattern of cells required to sufficiently restore the structure and function of the sacrificed tail. We discuss the behavioral and physiological features of selfamputation, with particular reference to the costs and benefits of autotomy and the basic mechanisms of regeneration. In the process, we identify how these behaviors could be used to explore the neural regulation of complex behavioral responses within a functional context.

Biography

Othman Aldokhi has completed his Ph.D. at the age of 26 years from Southampton University (England). He is the Director of the electron microscope unit at King Saud University. He is now a Professor of embryology and developmental biology has published more than 26 papers in reputed journals and has been serving as an editorial board member of reputed.

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