

California State University, Fresno  
Department of Biology presents

## **Regeneration lost and found: Evolution of regeneration loss in planarians and annelids.**



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**Friday, September 19, 3:00 PM**  
**Science II 109**

Variability of regenerative potential among animals has long perplexed biologists. Many invertebrate organisms, including planarians and annelids, possess exceptional regenerative abilities and have become important models for understanding the molecular basis of regeneration. However, planarian and annelid species with limited regenerative abilities are also found. Despite the importance of understanding the differences between closely related, regenerating and non-regenerating organisms, few studies have focused on the evolutionary loss of regeneration and the molecular mechanisms leading to such regenerative loss remain obscure. We have characterized the temporal and molecular mechanisms underlying regeneration loss in both planarians and annelids and have shown that either altering the spatiotemporal nature of amputation or experimentally down-regulating aberrant signal transduction can restore full regenerative capacity. This work reveals that manipulating a single signaling pathway can reverse the evolutionary loss of regenerative potential.

**For further information: [www.csufresno.edu/biology](http://www.csufresno.edu/biology) or phone 278-2001**

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