



CDB SEMINAR

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Monday, December 13, 2010

16:00~17:00 C1F CDB Auditorium

Extensive regeneration ability in *Amphioxus (Branchiostoma lanceolatum)* provides insight into the evolution of chordate regeneration processes

Summary

Why and how some organisms are able to regenerate is an important question in evolutionary and developmental biology. Situated at the base of the chordate lineage, prior to the whole genome duplication events characteristic of vertebrates, the cephalochordate amphioxus is in a unique position to answer questions about the evolution of regeneration. Here we present the first in-depth study of regeneration in the European Amphioxus, *Branchiostoma lanceolatum*. Strikingly, amphioxus adults are able to regenerate extensively when amputated at multiple anterior and posterior levels, including all major structures of the tail. Regeneration rate decreases with age as evinced by development of a classifier that predicts class belongingness of young and old adults with >94% accuracy. Regeneration may involve dedifferentiation of existing structures, followed by expression of *msx* in undifferentiated blastemal cells, and neurogenesis. We further demonstrate that regeneration is linked to the mobilisation and proliferation of a pool of satellite-like progenitor cells that are Pax3/7⁺. Insight gained from amphioxus may have important implications for our understanding of the evolution and diversity of regeneration mechanisms in chordates.

Host:

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