Evolutionary insights and constraints from the nervous systems and behavior of cavefish

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Abstract

Caves and other subterranean habitats represent one of the most challenging environments on the planet. Bony fishes are one of the few vertebrate groups that have successfully colonized and are completely restricted to those habitats. Despite being known to science for over 150 years, only recently have cavefishes become model systems for evolutionary studies pertaining the nervous system. Several cavefishes, such as the Mexican characid *Astyanax mexicanus*, have provided valuable insights into how fishes have evolved to cope with life in perpetual darkness. Here, I summarize the current understanding of nonvisual sensory modalities and divergent social behavior in the Mexican *Astyanax mexicanus*, the Brazilian *Eigenmannia vicentespelea* and the Ecuadorian *Astroblepus pholeter*. Only future comparative studies nested within well-resolved phylogenies will clarify the sensory adaptation of fishes to subterranean habitats.

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Conflicts of interest