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**2-Year Funded Postdoc Position: Sensory Convergence in Cavefishes**

The Hart Extremophile Evolution Lab is looking for a postdoctoral researcher to collaborate on a 2-year start-up funded project investigating the genetic basis and phenotypic expression of lateral line enhancement in the North American Amblyopsidae cavefishes. Salary is **$52k U.S.D. with benefits**.

Extremophiles are a fascinating group of organisms that live in harsh and unforgiving environments; they thrive in the darkest depths and the hottest habitats. One of these extreme habitats includes the subsurface habitat of caves. Caves have no light input, frequent flood events, and scarce natural resources. These conditions have led to convergent evolution of extreme adaptations in cave-obligate animals; however, research on convergent evolution in caves has primarily focused on the regressive or lost characters such as eyes, while those considered constructive, or additive have received little attention. Constructive traits include enhanced non-visual sensory perception, thought to be a crucial adaptive trait allowing these organisms to move about efficiently in their environment. The adaptive nature of constructive traits, the molecular basis, and even the sensory abilities of these traits remain largely untested. The project purpose is to examine the rules of life governing convergent evolution in caves. We use the North American native Amblyopsidae fishes as the study group, as members exhibit all three cave-adaptive states (cave, cave-surface, surface) and includes multiple independent origins of cavefish species, providing an ideal framework to study convergence.

We will examine the enhanced (hypertrophied) lateral line system of cavefishes as a constructive trait; this system detects water movement by aquatic vertebrates (i.e., is mechanosensory). **The** **goal of the project is to better understand the molecular basis and morphology of the convergent hypertrophied lateral line system in cave-adapted fishes**. The project objectives are to 1) examine the molecular (genomic and transcriptomic) basis for lateral line hypertrophy and 2) assess lateral line sensitivity through behavioral experimentation. We will generate genomic and transcriptomic sequences for the Amblyopsidae, comparing four species across surface and cave habitats and between two non-sister cavefishes. We will examine how the molecular basis of lateral line hypertrophy could impact the morphology and sensitivity of the lateral line through mechanosensory sensitivity experiments. This will be the first project to examine convergent evolution of a constructive cave-adaptive trait using both molecular and morphological means, opening the door to understanding multiple levels of convergence in response to extreme environmental conditions.

**I am looking for a researcher proficient in the following techniques**: DASPEI dye staining, behavioral software analysis (e.g., DeepLabCut, BORIS, EthoVision) **AND/OR** comparative genomics and transcriptomics construction and analyses with High Performance Computing knowledge.

The University of Alabama has a vibrant and rapidly growing community of supportive scholars. The Extremophile Evolution Lab is an open, honest, and inclusive work environment with national and international collaborations to grow an early career researcher’s network. And, if you’re adventurous, we do have cave and non-cave fieldwork opportunities, though not required for lab membership. Mentoring and outreach opportunities are available.

**Please reach out to PI Dr. Pamela B. Hart via email at** [**pbhart@ua.edu**](mailto:pbhart@ua.edu) **with your CV and a brief statement of how your research interests align with the lab.**