

Frogs in Class: Using amphibians for ribbiting community engagement

In the Fischer Laboratory at the University of Illinois Urbana-Champaign (UIUC), we study parental care behavior in neotropical frogs. This study system is great for community outreach because frogs host unique and attention-grabbing adaptations (e.g., transparency in glassfrogs and bright coloration and toxicity in poison frogs (Figure 1A and 1B)) but they also share fundamental behaviors that resonate with our audiences (e.g., parental care; Figure 1C). These characteristics make neotropical frogs a great tool with which we can spark curiosity and excitement while facilitating engagement with and a deeper understanding of biological concepts. Thus far, the Fischer Lab has made a presence in the community through participation in many one-time events and group visits including setting up a booth at a local farmer's market, leading a summer camp program, and visiting many local schools and libraries. The success of these visits inspired me to build our existing efforts into an impactful, long-term experience through a program termed Frogs in Class.

The program: Frogs in Class is a collaboration between the Fischer Lab and local K-12 schools that educates participants about poison frogs and how to care for them, provides necessary supplies and support for classrooms to adopt tadpoles from our frog colony, and presents six themed modules that capitalize on the current developmental stage of a classroom's frog to teach about diverse biological concepts (Figure 2). These modules are spread out over eight to ten months, following the school year and the approximate time it takes for tadpoles to reach adulthood. The six modules are: (1) Fantastic Frogs: an overview of frog life history and husbandry; (2) Terrific Tadpoles: the tadpole life stage and the influence of early development on an animal; (3) Fragile Froglets: a fragile life stage in a changing climate; (4) Jumping Juveniles: special features of a frog's survival toolbox; (5) Adaptive Adults: the diverse and unique behaviors of frogs; (6) Life of a Scientist: an open house tour of the Fischer Lab. The modules have been developed from a foundation of Next Generation Science Standards specific to each age group which allows our program to expand upon the concepts that students are already learning in their classroom. Each module overviews the frog's life stage, connects that developmental stage to a bigger biological theme, and cultivates STEM skills through emphasis on the scientific process including data collection and analysis. Importantly, the modules will be presented by scientists in the Fischer Lab which demystifies misconceptions about scientists and facilitates conversations about different paths a person can take to a STEM career, the challenges that one can face on that journey, and the various identities of scientists. In short, Frogs in Class lets students experience the fascinating life-history of frogs in real time, and simultaneously leverages students' curiosity

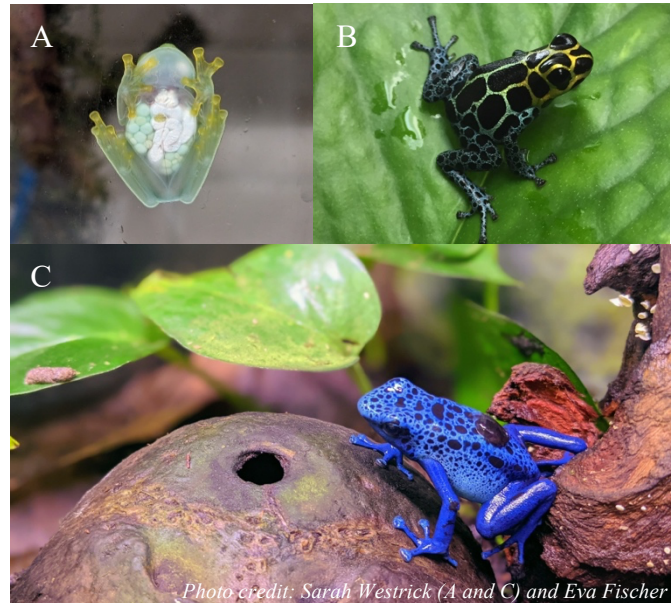


Figure 1: Photos highlighting transparency in glassfrogs (A), striking coloration in mimic poison frogs (B), and parental care in the form of tadpole transport in Dyeing poison frogs (C).

about their frogs to engage them in broader learning objectives, including how we can utilize model systems to help us answer central questions in biology, how and why novel traits arise, how we can mitigate the effects of global climate change, and what it means to be a scientist.

Sustainability: Frogs in Class is designed to maximize funding and sustainability. The modules have been developed as a sequence for K-12 classrooms; however, they can be easily adapted individually or as a sequence for other public venues (e.g., homeschool groups, libraries, and nature centers). By creating modules and materials that are reusable and independent, current and future lab members can plug into this curriculum and deploy it at a range of venues. With the ABS Outreach Grant, I am able to kickstart Frogs in Class by purchasing the supplies needed to get tadpoles and terraria into five local classrooms. Through this program I bridge the gap between biological research and society through long-term, interactive, and meaningful experiences that engage and spark a sense of wonder about animal behavior in our community.



Figure 2: Photos of Fischer Lab members piloting Frogs in Class modules in our community.