

Understanding Evolution by Comparing Tongue Velocity in Salamanders (Plethodontidae)

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Background

Salamanders are a rapidly evolving amphibian. Their internal structures and abilities are easily changed by their behavior within their preferred environment. Studying the origins and effects of these changes can help scientists predict how future populations will evolve and why.



The Lab

My work focuses on the physical and behavioral impact of evolving faster feeding methods. The two types of feeding methods observed are muscle and spring. Muscle is shorter and moves slower while spring is longer and moves rapidly.



The Goal

By studying these feeding styles my lab is hoping to learn what physical or behavioral traits changed or were lost to make space for the larger retractor muscle needed for the spring powered tongues to function.



Pseudotriton -Chiropterotriton 🔲 🔲 🖪 Batrachoseps Ensatina Desmognathus Ambystoma ——

What We Know

Within the family Plethodontidae, spring powered tongues have likely evolved independently of each other at least three times across species. This was partially due to the loss of small tissues that kept the tongue in place called myofibers. These myofibers are just one example of a physical trait loss that was needed for spring powered tongues to evolve.





Used Photron Fastcam Mini AX to capture the behavior and velocity of feeding habits. Salamanders were placed inside of glass enclosure with black grid paper. Arial view recording was used to compare tongues over measurable grid lines.



Video footage from the Photron high speed camera was uploaded to DLTdv8a deep learning program to track tongue movement across the grid. Distance traveled on the grid was divided by time to calculate the average velocity. Data is still in the process of being compiled and calculated.

Why Does It All Matter?

- ecosystem.
- other species.





Salamanders are an early detection species. Being able to predict changes in their populations gives scientists the unique ability to predict changes across their entire

Very little is known about the needs and lives of salamanders. Every piece of data collected gives us new insights into the rolls they play in our world. Similar feeding behaviors have evolved in other animal species that are largely understudied. Salamander research could help to increase scientific interest in