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## Evaluation of differences in testosterone concentration among species, sexes, and reproductive tactics in two-lined salamanders

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## Fall 2022 symposium abstract:

Evaluation of differences in testosterone concentration among species, sexes, and reproductive tactics in two-lined salamanders

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Inhabiting streams in the Appalachian Mountains in northern Georgia are two sympatric and closely related species of plethodontid salamanders—Brown-backed Salamanders (*Eurycea aquatica*) and Blue Ridge Two-lined Salamanders (*Eurycea* cf. *wilderiae*). Male *Eurycea* cf. *wilderiae* exhibit a morphological polymorphism corresponding to alternative reproductive tactics. “Searching” males display brighter coloration, the presence of cirri and a mental gland, and mate-searching behavior, while “guarding” males display hypertrophied jaw musculature, lack cirri and a mental gland, and perform mate-guarding behavior. In some other vertebrates, males with alternative reproductive tactics have different levels of circulating sex hormones (e.g., testosterone). To determine whether there were significant differences in testosterone levels between sexes, species, or alternative reproductive tactics in *Eurycea*, we collected non-invasive fecal samples from a captive colony during the courtship season. We then extracted the testosterone from the fecal samples and determined the concentrations by measuring the optical densities generated. We evaluated differences between species, sexes, and tactics using mixed models. Here, we present preliminary results and provide hypotheses regarding the relationship between circulating sex hormones and reproductive behaviors in *Eurycea*.