

BIOLOGICAL SCIENCES
COLLEGE OF ARTS AND SCIENCES

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE students

APPLICATION DEADLINE: 03/01/2023

PROJECT TITLE: Hormones and DevelopmentDaniel R. Buchholz
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Our lab uses frog metamorphosis as a model to understand how thyroid and other hormones control post-embryonic development in all vertebrates, including humans. Tadpoles require thyroid hormone and stress hormone to transform into froglets, comparable to the hormone-dependent water to land transition that occurs during birth in mammals and hatching in birds. We use frogs with mutations in thyroid hormone and stress hormone signaling to determine how hormones act to coordinate the many morphological and physiological changes in organs and tissues required to survive on land and breath air. UPRISE students working in the lab will use tadpoles with different mutations to study how these mutations affect the regulation of genes underlying the morphological changes of metamorphosis. Students will learn genetic screening for mutations, quantitative PCR for gene expression, and animal husbandry and hormone treatments, all while interacting with graduate students and working in a positive and informative laboratory setting.