

BIOLOGICAL SCIENCES
COLLEGE OF ARTS AND SCIENCES

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PROJECT TITLE: Evolution of viviparity in insects

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Project Description

Animals reproduce by the production of eggs (oviparous) or live offspring (viviparous). For cockroaches, there is a gradient from those that deposit eggs, those when the embryo develops within eggs in the mother until near hatching (ovoviviparity) and those when progeny hatch within the mother and are born alive. Thus, cockroaches represent an exceptional system to examine the transition from oviparity to viviparity. There have been many hypotheses when viviparous reproduction is beneficial over oviparity such as during cold or dehydration exposure, but these advantages have not been fully elucidated or thoroughly examined by experimentation. The main goal of this research is the investigation of improved stress tolerance and starvation resistance due to viviparity and if prolonged prenatal contact between the mother and progeny associated with viviparity increases stress resistance in subsequent generations. This project will involve examination of basic physiology, RNA-seq analyses, metabolomics, and microbiome analyses.