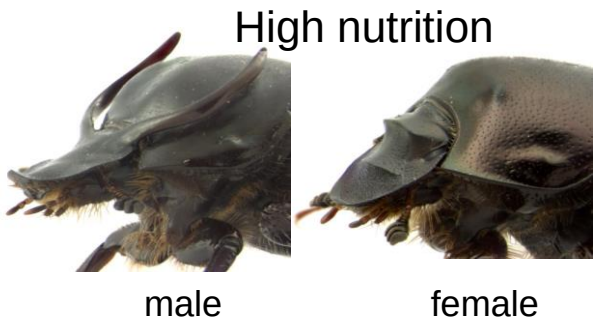
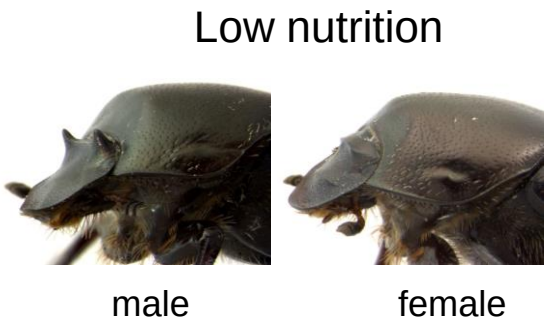
DEPARTMENT OF ECOLOGY & EVOLUTIONARY BIOLOGY

Dr. Cristina Ledon-Rettig– North Carolina State University

"Developmental Evolution in Context: Environment, Sex and Symbionts"





Development does not arise solely from genes and gene products, but also from interactions between genes and the environmental context in which they are found. This context can range from cell-cell signals and hormones, to diet and photoperiod, and further to other species such as symbionts. The phenotypic variation that develops from these interactions can potentially explain a wide variety of phenomena, from the origins of complex evolutionary novelties to the emergence of human disease. My research investigates these interactions across several levels of biological organization. In the first part of my talk, I show that expression of genetic variation is contingent on environmental cues, and provide evidence for how such environmentally dependent genetic variance (i.e., cryptic genetic variation) has fueled the evolution of a novel feeding morphology in anuran larvae. In the second part of my talk, I will delve deeper into the proximate mechanisms underlying the interaction between genes, sex and environment using comparative transcriptomics and functional genetic techniques. Specifically, I will dissect the developmental basis of a nutrition-dependent sexual dimorphism in horned beetles. Finally, in the last part of my talk, I will explore the genetic basis of interspecific epistasis between horned beetles and their nematode symbionts, and how hosts might adapt – or fail to adapt – to the anthropogenically-mediated loss of their symbiont partners. Through these and future projects, I hope to build a better understanding of how genomes interact with the environment and other organisms, and ultimately provide a more full and nuanced understanding of development.

RESEARCH TALK – Monday February 29; Room 27, Alumni Memorial Bldg; 3:20 – 4:20 PM.