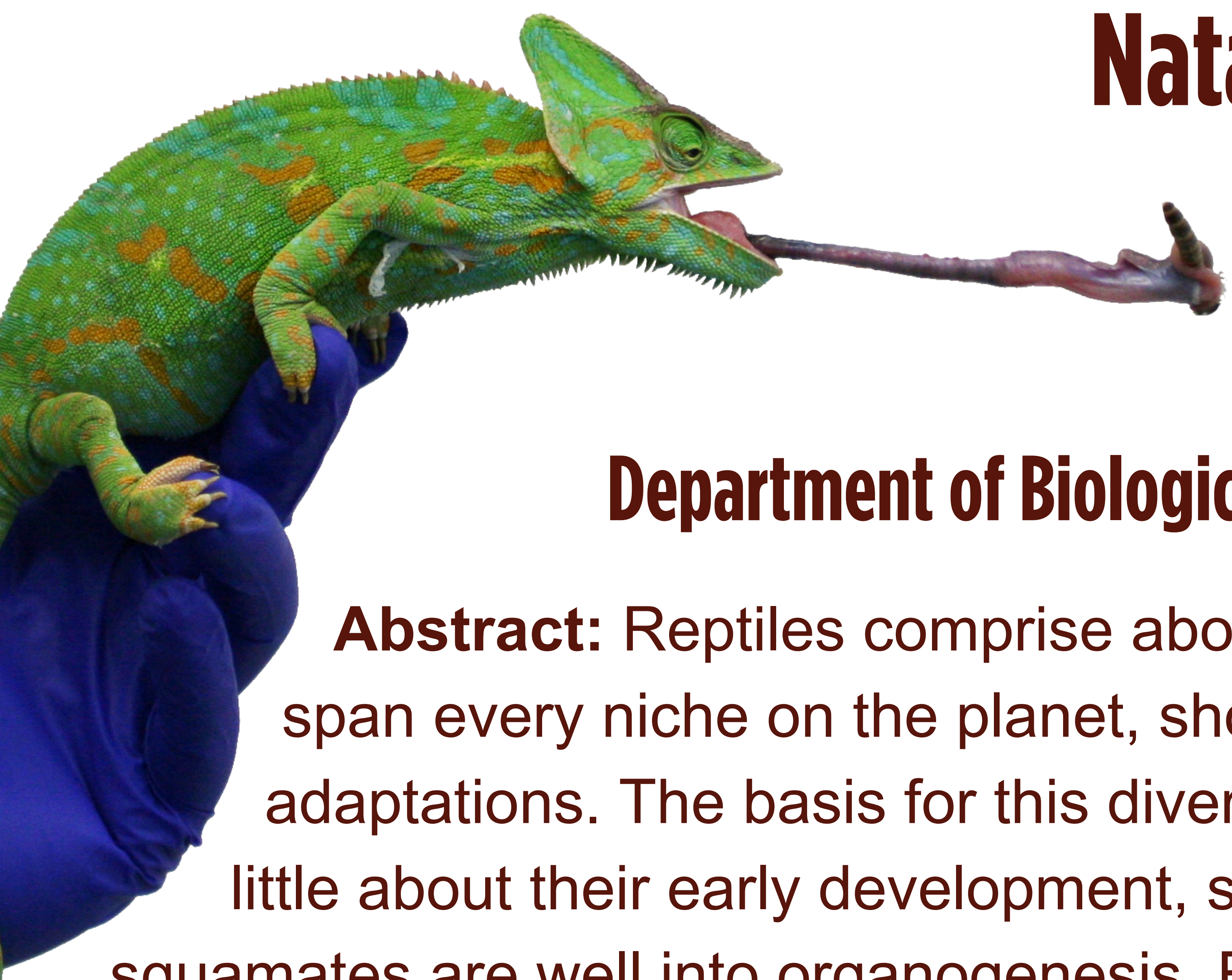




Left, right and everything in-between: Biomedical and evolutionary studies in veiled chameleon (*Chamaeleo calyptratus*)



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Abstract: Reptiles comprise about 23,000 species that span every niche on the planet, showcasing incredible morphological and ecological adaptations. The basis for this diversity is established during embryogenesis, yet we know little about their early development, since at the time of egg laying embryos of most squamates are well into organogenesis. Furthermore, few squamate genomes are available, severely lagging mammals and birds.

Veiled chameleons breed well in captivity, with pre-gastrulation stage embryos at egg-laying. I determined that they do not use motile cilia to establish left-right asymmetry, which differs from most deuterostomes.

We recently sequenced, assembled and annotated the veiled chameleon genome, which revealed that unlike chickens, geckos and turtles, chameleons retained both paralogs of Nodal, a critical regulator of gastrulation and left-right patterning. I have subsequently used the genome to also identify a candidate gene, driving the XX/XY – based sex determination in veiled chameleon.

The genome assembly has also allowed me to perform the first ever CRISPR/Cas9-based genome editing in veiled chameleons. Thus, veiled chameleons are a powerful, genetically tractable research organism, which I will use to investigate the evolution of early developmental processes and morphological adaptation in amniotes with the long-term goal of informing the study of human disease.

Wednesday, September 10th | 2:00pm–3:15pm | Science Hall 126 & Zoom

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