

**Abstract:**

In amniotes, sex can be determined either by genotype or by environmental conditions, primarily temperature, during early development. Reptiles exhibit remarkable diversity not only at the species level but also in terms of sex determination mechanisms, encompassing both genotypic and environmental sex determination. Despite significant advances in our understanding of environmental sex determination over the past ten years, there are still gaps in our knowledge regarding its molecular mechanisms and evolution. Recently, a theoretical model has been proposed suggesting that reactive oxygen species (ROS) and calcium ions play an essential role in capturing temperature cues by the embryo during the crucial process of sex determination. In this thesis, I tested the role of ROS in the leopard gecko (*Eublepharis macularius*) and the tiger gecko (*Pachydactylus tigrinus*) by treating their eggs with paraquat. Additionally, the effect of hypoxia was also tested. Hypoxia seems to be an ecologically important factor during the incubation of many reptile eggs and could possibly affect environmental sex determination, e.g. by increasing ROS production. The results do not support the effects of either ROS or hypoxia on sex determination. Nevertheless, based on these results, the hypothesis regarding the influence of ROS (or paraquat) and hypoxia cannot be definitively rejected and requires further investigation.

**Key words:**

sex determination, ESD, geckos, paraquat, hypoxia, reactive oxygen species