Developmental Herpetology

Guest Editors

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Preface

Developmental Herpetology - state of the art of amphibian and reptile developmental biology

The Special Issue which you are now reading is the offspring of a vivid backstage conversation during a scientific meeting with the Editor-in-Chief of *The International Journal of Developmental Biology (Int. J. Dev. Biol.)* on the importance of research on the developmental biology of Amphibians and Reptiles yesterday, today and in the future. As you can see, we managed to convince the Editor-in-Chief that the matter is indeed important. We hope you will enjoy the outcome.

This Special Issue combines articles on a plethora of developmental and Evo-Devo subjects starting with the role of aromatase expression in the brain and its role in the imprinting of sexual trends in turtle, and continuing with: the development of the turtle carapacial ridge; the regulatory role of the zfp 36 protein and the colony-stimulating factor-1 receptor in *Xenopus* macrophages; the role of the equilibrium between phosphatases and kinases in M phase regulation; mechanism of epithelial cell divisions during *Xenopus* gastrulation; the role of Dead end protein in germ cell development; serotonin signaling in left-right patterning in *Xenopus*; the Syk tyrosine kinase in Bufonidae fertilization; development of Bidder's organ; the development of the epidermis in the reptilian embryo, through the application of bioinformatics tools to analyze the sequence of predicted Crip family proteins in *Xenopus*; an optogenetics methodology to study ion flux-dependent signals in embryonic *Xenopus* cells, reptile genome usage for analysis of amniote development, regeneration and *in silico* identification of genes involved in the newt sperm-egg interaction, and the usage of corn snake genome sequence for EvoDevo studies.

We also provide an overview of amphibian embryology during the last century and a perspective on the relevance of snake development model system and snake genome for Evo-Devo studies; the origin of the amniote yolk sac; digit evolution in lizards; the evolution of egg size in salamanders; the role of cartilage in amphibian development and evolution; evolutionary trend for metamery reduction and gonad shortening in Anurans and also developmental and paleontological perspectives on the role of reptile fossils in understanding the evolution of viviparous reproduction. In summary, this Special Issue is an overview of the state-of- the art of Developmental Herpetology. It illustrates where we stand and where we are going as a relatively small scientific community vigorously participating in the progress of one of the most fascinating fields of developmental biology.

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