

Evolution of sex determining mechanisms in squamate reptiles (Reptilia: Squamata)

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Ph.D. thesis

Abstract

This Ph.D. thesis is focused on the evolution of sex determining mechanisms and genomes in squamate reptiles. It is based on three published articles and two manuscripts. The evolution of sex determining mechanisms, sex chromosomes and genomes, and their organisation, was studied on a wide phylogenetic scale of the whole group of squamate reptiles and some lineages of other Sauropsids, as well as on the small phylogenetic range as a detailed comparative study inside individual lineages of squamates. This thesis is based upon the use of classical cytogenetic methods, methods of molecular cytogenetic (especially fluorescent *in situ* hybridisation) and the results were analysed using phylogenetic approaches. The results and outputs of this study represent an important contribution to the general knowledge of the principals of sex determination and the evolution of these phenomena not only in squamate reptiles but also in the whole group of amniotes. Using the results obtained during the work on this thesis we can conclude that sex chromosomes evolved in particular lineages of amniotes independently. This origin was in some cases followed by accumulation of microsatellite sequences on sex chromosomes, but their identity is not shared between sex chromosomes of individual lineages across the phylogenetic distribution. Comparison of genome organisation indicates the high degree of conservatism in squamates. A particular chromosome rearrangement could be considered as a synapomorphies of individual phylogenetic groups. Conservatism of genomes thus seems to be the common characteristic of the whole group of sauropsids and not only the squamates.