

Identification and evolution of the gene regulatory network underlying head development in five closely related *Drosophila* species

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One major question in evolutionary biology concerns the molecular basis of the morphological variation observed in nature. The size and shape of a complex organ is defined during its development by the action of gene regulatory networks (GRNs), which ensure the tightly controlled expression of developmental genes. Changes in the function and regulation of those genes have been shown to account for variation in morphological traits. However, a comprehensive understanding of how GRNs evolve to promote morphological divergence is missing to date. Therefore, this proposal seeks to investigate the architecture and the evolution of the GNR underlying head development in five closely related *Drosophila* species. A combination of recent advances in sequencing technologies (RNAseq), morphological description and functional assays will be applied to identify changes within the GRN that account for variation in head morphology. The results of this study will significantly contribute to the mechanistic understanding of morphological evolution.

Projektbeteiligte

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