

**Invitation to a Guest Lecture**  
**at the joint colloquium of the Institute of Biology and Environmental Sciences and the**  
**Department of Neuroscience**

**Module bio890: Current topics in biology**

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Naturkunde Museum Stuttgart

**Genomic Insights into Hybrid Zone Dynamics: Candidate Barriers to Gene  
Flow in Buntings**

Hybrid zones are defined as areas where genetically differentiated groups of individuals meet, mate, and produce offspring of mixed ancestry. For decades, hybrid zones have been considered natural laboratories that provide direct insights into the traits and genes underlying barriers to gene flow between incipient species over time. However, our understanding of the genomic regions involved in the initial stages of reproductive isolation, and the extent to which selection can effectively reduce gene flow to facilitate species formation, remains limited to a few well-studied organisms in temperate regions. Addressing these longstanding questions requires studying hybrid zones where known phenotypes are associated with reproductive isolation, where these phenotypes can be linked to genotypes, and where temporal sampling across several generations is available. Here, we address these questions using a moving hybrid zone between two songbirds – the black-headed bunting (*Emberiza melanocephala*) and the red-headed bunting (*E. bruniceps*) – where the species are hypothesized to be behaviorally isolated due to an association between male plumage and female preference. In this study, we used whole-genome sequencing data from 38 individuals to examine the genomic composition of the hybrid zone and to investigate its dynamics. We assessed how heterogeneous the genomic landscape of differentiation is, and identified candidate regions across the genome that exhibit high local genetic differentiation. These regions may be maintained by selection over time, despite ongoing gene flow.

**05.11.2024, 16:00 Uhr, W04 1-162/hybrid 5.02.001**

Host: Prof. Dr. Miriam Liedvogel (Director Institute of Avian Research), IfV

Members of all institutes are cordially invited to join the lecture.