

When morphometrics meets genetics: the case of the common dormouse, *Muscardinus avellanarius*.

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The aim of the study is to apply geometric morphometrics to the study of evolutionary processes that might have driven intra-specific differentiation of the common dormouse *Muscardinus avellanarius* in Europe. The analysis of phenotypic features appears as a valuable complement to genetic analyses, providing an insight into evolutionary processes such as differentiation by vicariance or adaptation to different environments. Previous genetic studies based on mtDNA genes revealed a complex phylogeographic pattern for the common dormouse with the presence of two highly divergent lineages subdivided into geographic sublineages. We thus investigated whether this genetic differentiation leads to morphometric differences.

We examined 150 museum specimens of dormouse from 34 localities in 12 countries. For each specimen, the size and shape of the first upper molar was quantified using an outline analysis based on Fourier methods. A geographic structure emerges from the morphometric pattern of differentiation, partially corresponding to the expectations based on the genetic results. The main differentiation, however, was unexpected and revealed a divergent Austrian cluster. This region was not documented so far for genetic analyses and morphometric data therefore challenge a more extensive sampling of this species that might reveal the existence of a further lineage.