20/11/2023

Dear Editor,

Please find uploaded the manuscript “Beyond CREA: evolutionary patterns of non-allometric shape variation and divergence in a highly allometric clade of murine rodents” (Marcy et al.) for consideration for publication at Ecology & Evolution.

Our study addresses a very common, but previously unexplained pattern of proportional size change in the cranium – Craniofacial Evolutionary Allometry (CREA) as arising from the evolution of feeding ecology. The analyses we present support a recent new framework suggesting that CREA is not a developmental constraint or undefined evolutionary “line of least resistance”, but rather has clear association with the biomechanics of size change in species with similar dietary ecology. Our study supports this by contrasting allometric and non-allometric shape variation, integration, and phylogenetic divergence, which shows that dietary specialists are the ones that “break” the CREA pattern as predicted by this new framework.

Our study is entirely replicable. All 3D data and original landmarking files are already published and the relevant 3D files are accessible via MorphoSource. All code and data to run all analysis, with detailed instructions, are on Github. Reviewer links are given in the data availability statement and data/code will be released to the public upon acceptance.

We believe that this manuscript is a suitable contribution to Ecology & Evolution because it supports a novel framework which directly links the ecological function of the mammalian skull with the evolution of mammalian cranial diversity. It literally crosses the intersection between (feeding) ecology and mammalian evolution, making it of interest to evolutionary biologists, ecologists, mammalogists, and more specialized scientists such as geometric morphometricians alike.

All authors have seen the final manuscript and agree with its publication.

Regards,

Vera Weisbecker