

## Molecules and fossils - how DNA data contribute to our knowledge on ostracod evolution and history.

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In the last two decades, molecular techniques have been increasingly applied to non-model organisms, which have not been subjected to genetic research before. This has generated a large number of publications and a vast amount of DNA sequence data. For many species, molecular data are now available on genomic scales instead of single genes. Ostracods are still one of the crustacean groups that are underrepresented in molecular research, and very few genomic resources are available. Nevertheless, a growing number of DNA sequence data from specific genes has become available for Ostracoda, which can be applied to evolutionary research.

Here, we will focus on two research fields using DNA sequence data:

(1) Answer specific research questions in ostracod evolution. We will discuss molecular evidence for the evolution of bioluminescence, show how abiotic and biotic factors could potentially have shaped speciation of ostracods in ancient lakes, and present examples of how molecular data can verify long-standing examples of morphospecies with apparent global-wide distributions.

(2) Compare dating approaches of molecular data with fossil evidence. Here, we will focus on specific examples as well as present phylogenetic approaches where evolutionary events of the entire Crustacea are dated with molecular tools and fossils. This will allow us to evaluate the usefulness of combining these two approaches.