

## **Systematics and evolution of (not only marine) Heterobranchia**

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More than 10 years ago, Opisthobranchia, a group known for two centuries, was literally stabbed down after it became clear that this group was paraphyletic or even polyphyletic. Since then, many molecular analyses have confirmed these results. In my talk, I will briefly discuss the latest genomic results on Heterobranchia, highlighting the groups that are still problematic. I will also use some examples to show how genomic analyses are replacing single gene analyses to explain the evolution of certain ecological traits. Based in part on the phylogenies, I will also summarize the current state of knowledge on some interesting biological phenomena that my research group and I (but not only we) have been working on. These include the incorporation and utilization of photosymbiotic units, as well as defense systems such as cnidocyst sequestration or the incorporation of secondary metabolites. However, I would also like to address biodiversity studies and methods that are of interest for assessing and monitoring marine heterobranch biodiversity. I apologize in advance that I will not be able to cover all the interesting aspects of the truly diverse Heterobranchia in this review and that the focus will be mainly on marine Heterobranchia.