

Marine invertebrates are a source of bioadhesives with biomimetic interest

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Protein-based bioadhesives are found in several marine invertebrates that developed attachment devices to adhere to various substrates. These polymers are of interest to materials science to create bioinspired-adhesives that can perform in water or wet conditions and can be applied in a variety of biotechnological and industrial fields. Although the high diversity of invertebrates that inhabit the marine seafloor, an enormous diversity of structures and principles used in biological adhesives remain unexplored. Only a very limited number of model systems have inspired the development of biomimetic adhesives, the most acknowledged the mussel byssus adhesive. Studies on different marine invertebrates provide new understanding related to the mode of action of biological adhesives and facilitate the development of synthetic counterparts with improved performance. In this work we give an overview of other marine invertebrates that are studied for their bioadhesive properties, from the relatively well studied barnacles and tubeworms to the less known tunicates, in view of their interest in the biomedical field. The molecular features are described and examples of bio-inspired designs are also showed. We highlight structures from marine invertebrates which can be characterized for the development of new adhesives and underline the importance of analyse their functions in the marine environment.