Characterization study of adhesive proteins from *Bathymodiolus azoricus* mussel from deep-sea hydrothermal vents

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Marine mussels are able to anchor to foreign surfaces in seawater through the use of adhesive proteins, the mussel foot proteins (Mfps). Mfps are known to form adhesive plaques with high interfacial binding strength, durability and toughness. One of the main constituents of Mfps is 3,4-Dihydroxyphenylalanine (DOPA), a modified tyrosine through post-transitional hydroxylation. DOPA allows several types of chemical interactions and crosslinking, which results in the ability of Mfps to solidify in situ and bind tightly to various types of surface substrates. Due to these remarkable wet adhesive properties, several natural Mfps have been extracted and analyzed from different species of mussels aiming the creation of adhesive materials to use as biomedical adhesives and drug carriers for therapeutic uses.

Bathymodiolus azoricus mussel, subsists at vent sites, amid unusual levels of heavy metals, pH, temperature, CO_2, methane and sulfide, while coping successfully with environmental microbes [4]. These conditions require unique anatomical and physiological adaptations. So, one hypothesize that adhesive proteins of *Bathymodiolus azoricus* might show different properties in comparison with homologous proteins from other mussels.

Here, we propose the identification and characterization of adhesive proteins from the deep sea hydrothermal vent mussel *Bathymodiolus azoricus* following a genomics-based approach and further compare the obtained results with the already described adhesive proteins and coding gene sequences from other marine mussels such as *Mytilus galloprovincialis*. The produced knowledge is relevant for the design of innovative bioadhesives for biomedical application.