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ABSTRACT

In recent years, biofilm formation has shown a tremendous impact in medicine, changing antimicrobial therapeutics or even our comprehension about chronic infections. Despite the intensive research in this topic, biofilm impact on ecosystems and more specifically in aquatic environment has not been given the same importance.

Biofilms has been recognized as the predominant form of microbial life in aquatic ecosystems, since bacterial interactions within this matrix provide to the microorganism a number of benefits. This matrix produced by the bacteria protects the cells from external environment and facilitates bacterial communication through chemical and physical signals, also known as quorum sensing, that enables bacteria to remain into a favorable environmental niche. Many ecological advantages can be attributed to biofilms like resistance to nutrient deprivation or to external components. Biofilm is also influenced by external conditions such as the flow speed, light and physico-chemical components, being a dynamic structure with the ability to adapt to its external environment setting. In research, several techniques are applied to study marine biofilm, especially *in situ* hybridization methods which are very successfully to investigate biofilm production and community structure allowing an accurate qualitative and spatial distribution analysis of biofilm formation by single or even polymicrobial communities.