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The exciting world of biofilms

Shrishti Banerjee

The significance of biofilms has attracted scientists to perform innumerable studies on them in past decades and even at present. A biofilm is a community of microbes in which cells stick to each other irreversibly attached to a surface. The formation of a biofilm begins with the attachment of the microbes to a surface (living or non-living). This leads to the formation of a colony, which ultimately separates from the surface after maturation. Biofilms could be extremely harmful to society as they are capable of causing both device and non-device associated infections. One of the most widely known infections caused by biofilms (bacteria) is the dental plaques. The main cause of concern with biofilms is that they are able to resist the human immune system as well as antibiotics, which compels the researchers to understand and manage biofilm-related diseases. Biofilms can be very useful to society as well. They are being used in the secondary stage of wastewater treatment, bio-degradation of oil spills in oceans, for generating electricity by utilising organic waste materials and in the bio-leaching industry to extract metals from ores. They have the potential to degrade many polymers that are recalcitrant in the environment and hence can be a major tool in the field of environmental microbiology. The biofilms exhibit a detrimental effect on human health and industrial productivity but an intensive study regarding the management and manipulation of these colonies can prove to be a boon for society. Thus, a deeper understanding of biofilms and their interactions with the human immune system as well as their useful characteristics is required to understand the full potential of biofilms.

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