Biofilms are widespread in nature and constitute an important strategy implemented by microorganisms to survive in sometimes harsh environmental conditions. They can be beneficial or have a negative impact particularly when formed in industrial settings or on medical devices. As such, research into the formation and elimination of biofilms is important for many disciplines. Several new methodologies have been recently developed for, or adapted to, biofilm studies that have contributed to deeper knowledge on biofilm physiology, structure and composition. In this review, traditional and cutting-edge methods to study biofilm biomass, viability, structure, composition and physiology are addressed. Moreover, as there is a lack of consensus among the diversity of techniques used to grow and study biofilms. This review intends to remedy this, by giving a critical perspective, highlighting the advantages and limitations of several methods. Accordingly, this review aims at helping scientists in finding the most appropriate and up-to-date methods to study their biofilms.
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