Methods for studying biofilm formation: flow cells and confocal laser scanning microscopy.

In this chapter, methods for growing and analyzing biofilms under hydrodynamic conditions in flow cells are described. Use of flow cells allows for direct microscopic investigation of biofilm formation. The flow in these chambers is essentially laminar, which means that the biofilms can be grown under highly controlled conditions, and that perturbations such as addition of antibiotics or change of the growth medium can be done efficiently at a defined time point. The protocol includes construction of the flow cell and the bubble trap, assembly and sterilization of the flow cell system, inoculation of the flow cells, running of the system, confocal laser scanning microscopy and image analysis, and disassembly and cleaning of the system.

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