

## **Biofilm formation: a microbial strategy to assimilate particular substrates**



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### **Abstract:**

Heterotrophic bacteria are dependent on organic compounds to sustain their growth, but they can only absorb low molecular weight compounds dissolved in water. In natural habitats, a substantial part of the organic carbon is represented by polymeric substances (proteins, polysaccharides, lipids...) that are poorly soluble in water and occur as particles or adsorbed on surfaces and are therefore not directly assimilable by bacteria. Biofilm formation appears to be a strategy to overcome the low accessibility of nearly water-insoluble substrates and is therefore a critical process in the assimilation of organic matter. Since these biofilms develop on a nutritive interface that serves as both physical support and growth substrate, they also represent an original facet of biofilm biology. This presentation will focus on biofilm formation as a mechanism to exploit water-insoluble nutrients such as chitin, cellulose, or hydrocarbons that are inaccessible to planktonic bacteria. The most prominent mechanisms of biofilm formation on organic particles as revealed by studies on model strains will be reviewed, with particular emphasis on biofilm formation on lipids and hydrocarbons by *Marinobacter nauticus*.

### **Biography:**

Régis Grimaud is Full Professor in the group Chemistry and Microbiology of Environment of IPREM at UPPA (France). He prepared his PhD at both the Université Libre de Bruxelles (Belgium) and Joseph Fourier University in Grenoble (France) in cell and molecular biology in 1995. Before joining the Université de Pau et des Pays de l'Adour (UPPA) in 2001, he conducted research at the Université Libre de Bruxelles (Belgium) and National Institutes of Health (Bethesda Maryland, USA) as a post-doctoral fellow. His interests are the molecular aspects of biofilms degrading hydrophobic organic compounds, and iron assimilation in marine bacteria. He is a fellow of the board of Société Française de Microbiologie (SFM) and is the author of over 60 peer reviewed publications.