Conjugation in *Bacillus cereus*: how does the biofilm lifestyle impact on transfer efficiency?

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Bacterial evolution has mainly been driven by Horizontal Gene Tranfers (HGT). Among these, conjugation and mobilization have been described for over fifty years, in liquid media. However, it is now generally admitted that, in nature, bacteria are mostly found in interface-associated communities. The perspective of elucidating how the biofilm lifestyle impacts on HGT has recently gained in interest.

This study focused on surface colonizer *Bacillus cereus sensu lato*, an opportunistic food-borne pathogen and on the conjugation of the model plasmid pAW63, a Gram-positive element from *Bacillus thuringiensis* HD73. The aim was to unravel pAW63 transfer behaviour *in situ* by means of confocal microscopy. An algorithm was created in order to accurately estimate the frequencies of plasmid transfer on a sampled zone of the biofilm.

The first results show local increase up to about 10^3 in conjugation frequencies obtained in biofilms compared to what happens in a planktonic culture. This high efficiency transfer of pAW63 is consistent with the massive reduction of mean intercellular distance. Microscopy observations revealed the presence of hyperelongated and hyperflagellated cells called that undoubtedly are vectors of movement inside the biofilm core. One could compare these swarmers as the catalysts of plasmid transfer within surface associated populations.