

Séminaire LIONS



Mercredi 10 septembre 2014 à 11h00, bât. 127, salle 26

! Jour inhabituel !

Amphiphilic β -sheet Peptide Monolayers with Tailored Functionality

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Amphiphilic peptides can be programmed to yield functional self-assembled structures at interfaces and in bulk. In particular the β -sheet structure provides a simple platform with periodic alternation of hydrophobic and hydrophilic amino acids that may form fibrillar structures in solution or coatings on planar interfaces. We have shown that amphiphilic and anionic β sheet peptides may induce calcium-phosphate mineralization in monolayers and hydrogel systems, relevant to bone tissue regeneration applications. Langmuir monolayer studies have been utilized to shed light on intermolecular interactions of small molecules, such as doxorubicin with the amphiphilic peptides. Bifunctional peptides were designed to spontaneously form monolayer coatings on titanium, a metal widely used in bone implantology, while also inducing mineralization. Interactions with organic molecules could be tailored to monolayers of amphiphilic β -sheet peptides designed to present the catalytic triad residues of the enzyme acetylcholinesterase. These peptides showed concentration dependent sensitivity to the highly toxic organophosphate paraoxon, demonstrating that β -sheet monolayer peptides may mimic, to a measurable extent, enzyme activity and be further exploited in context of biosensing devices.

<http://www.bgu.ac.il/~hannarap/>