Studying cell mechanics during early stages of infection using Atomic Force Microscopy and correlative microscopy techniques

Frank Lafont

Cellular Microbiology and Physics of Infection
CNRS UMR8204 – INSERM U1019 – Institut Pasteur de Lille – Univ. Lille

Regulation of cell signaling response to cell mechanics perturbation has attracted attention over the last years. Infection induces strong signaling response either to the benefit of the host or of the pathogen. However, the place of cell mechanics in that context remains under investigated. Deciphering the molecular basis of the cell response to infection can lead to new therapeutic approaches circumventing the antibiotic resistance by focusing more on molecular pathways of the host. In order to better analyze the interaction between the pathogen and the host, several techniques can be applied. Atomic force microscopy allows to perform multiparametric measurements such as stiffness, interaction forces, receptor mapping, viscosity at very high resolution. We will further discuss the possibilities now emerging to couple AFM to light and electron microscopies and the new avenues they open.