

# Biomedical Applications of Atomic Force Microscopy

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Atomic Force Microscopy is now widely used to explore biological questions<sup>1</sup>. More than a simple microscopy tool, AFM aggregated with the developments required to apply it in biology is a technology giving access to a new and original understanding of interactions at biological interfaces. The characterization of these interactions goes beyond the structural description and consists in characterizing biological functions. AFM as a force machine gives access to the characterization of some of these functions such as nanomechanical properties of cells, molecular recognition phenomena, cell adhesion to materials...

In this presentation, I will review interdisciplinary developments ranging from the functionalization of AFM tips with biomolecules<sup>2</sup>, to their use to probe the oligomerization state of G Protein coupled receptors and to the mechanobiological characterization of healthy or diseased cells, treated or not treated with a molecule of interest<sup>3,4</sup>.

In a more prospective part, I will evoke the work in progress on the automation of AFM measurements on living cells in order to generate large quantities of data<sup>5,6</sup>. I will show the possible contribution of machine learning for data analysis before concluding on the ongoing evolution towards the notion of mechanome.

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