UNIVERSITÀ DEGLI STUDI DI MILANO

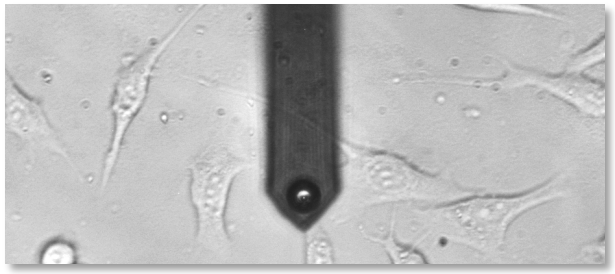
IEO Istituto Europeo di Oncologia

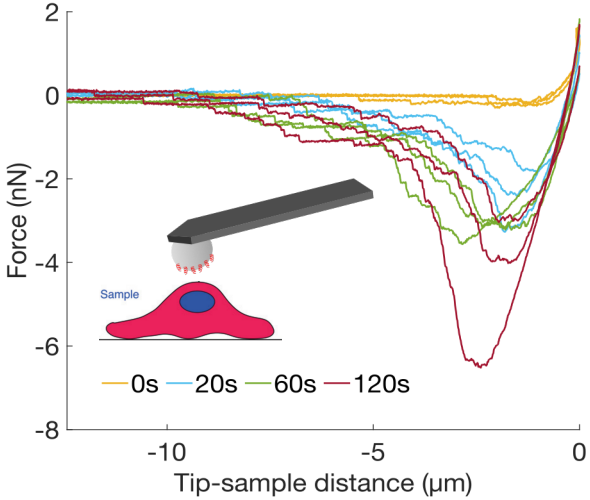
Master Thesis project

Study of cell-microenvironment interaction by adhesion force spectroscopy

Cells and their microenvironment (the extracellular matrix) have a strong interplay and influence each other; the perturbation of this interaction can trigger the onset of the development of diseases such as cancer. Through membrane proteins like integrins, cells can perceive mechanical stimuli form the microenvironment and translate them into biochemical signals (mechanotransduction), which modulate cellular functions. This project aims to study the interaction of specific adhesion molecules on the cell membrane with the extracellular matrix by **advanced force spectroscopy methods** based on atomic force microscopy (AFM) and custom functionalised probes. The student will carry out nanomechanical and force spectroscopy measurements and correlate the results with biological information. Collaborations: IEO (Dr. G. Diaferia).

Gauthier et al., Curr Opin Cell Biol, 50, 20–26, (2018), DOI:10.1016/j.ceb.2017.12.0
Chighizola et al., Nanoscale, 12, 14708–14723 (2020), DOI:10.1039/d0nr01991g.
Holuigue et al., bioRxiv DOI: 10.1101/2022.12.02.518867.





Contacts: Prof. Alessandro Podestà, Dipartimento di Fisica, e-mail: alessandro.podesta@mi.infn.it
Dott. Matteo Chighizola, Dipartimento di Fisica, e-mail: matteo.chighizola@unimi.it
Dott. Hatice Holuigue, Dipartimento di Fisica, e-mail: hatice.holuigue@unimi.it