

## **Harnessing atomic force microscopy to investigate cell mechanics in response to physical cues**

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Understanding the causal relationships between cell mechanics and biological function is emerging as an essential need in the biomaterials field. Using physical cues, *e.g.*, surface topography and mechanical properties, to tune the functional cell behavior is a potentially powerful strategy for designing novel cell instructive medical implants. [1] However, the cell's mechanical response to physical stimuli has been poorly studied, and the mechanotransduction mechanisms that elicit the cell's biological function are still largely unknown, limiting the rational design of such cell instructive implants.

Here, we will discuss the use of different atomic force microscopy (AFM) based techniques to quantify the mechanical parameters of live cells in response to different physical cues (*e.g.*, mechanical properties, topography), intending to elucidate the mechanical mechanisms governing the cell response to the physical environment. [1-2].

[1] M. Nouri-Goushki et al., ACS Appl. Mater. Interfaces 13 (29), 33767-33781 (2021).

[2] L. Angeloni, et al., Small 19, 2204662 (2023).