

## **Cell Mechanics From DNA Conformational Dynamics to Lipid Membrane Mechanical Properties**

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We use AFM imaging, force spectroscopy, high-speed AFM and mechanical tests to characterize and quantify different physical aspects of the cell. From the role of topology and mechanics in the functional dynamics of DNA (in collaboration with Dr Sonia Trigueros) to local and global phenomena in membranes. We investigate the role of mechanical properties and electrostatics of membranes in saline solutions at different levels of complexity: from the local interactions of individual membrane protein alpha-helices to global membrane mechanical and dynamic properties. We aim at producing a comprehensive physical picture of the cell membrane where individual membrane protein activity is linked to global membrane functions through clustering and cooperativity.