

SEMINAR

CICbiomaGUNE

MEMBER OF BASQUE RESEARCH
& TECHNOLOGY ALLIANCE

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Molecular Mechanics of the
Cardiovascular System at CNIC

Protein mechanobiology in cell and tissue physiology



Wednesday, 26th April
12.00 p.m.

CIC biomaGUNE - Seminar Room

The research interest of my laboratory is to understand how mechanical proteins generate and sense mechanical forces in the context of a living cell. Both aspects of protein mechanobiology allow organisms to thrive on Earth's gravitational field (think for instance in locomotion or fluid circulation) and to influence their environment (mastication, coughing). In addition, protein mechanobiology is a key contributor to tissue development and organization. I will focus my presentation on three projects illustrating the role of protein mechanics across different biological scales in health and disease. First, I will show data demonstrating that protein glycations typical of diabetes stiffen cardiac cells via formation of intramolecular crosslinks in the giant protein titin. Next, I will present the surprising observation that cell mechanosensation is blunted by energy dissipation of the extracellular matrix, a finding that was enabled by the development of novel engineered protein biomaterials. Finally, I introduce our latest efforts to manipulate protein mechanics in living cells and animals, an approach that hopefully will shed light on how proteins translate mechanical signals into metabolic and biochemical words, the language of the cell.