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Soggetti	Biomedical engineering Biophysics Biological physics Cell membranes Immunology Atomic structure Molecular structure Biomedical Engineering and Bioengineering Biological and Medical Physics, Biophysics Membrane Biology Atomic/Molecular Structure and Spectra
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Nota di contenuto	Introduction -- Review -- Nanodisc assembly and the study on the interaction between the lipid and ion -- Calcium regulates T cell receptor activation through phospholipid electrostatic manipulation -- The preliminary study on the structure of Dengue Virus NS2B-NS3p in complex with aprotinin -- Summary and prospect of this dissertation.
Sommario/riassunto	This thesis describes the use of biophysical and biochemical methods to prove that calcium has a positive feedback effect on amplifying and sustaining CD3 phosphorylation and should enhance T-cell sensitivity to foreign antigens. The study presented shows that calcium can regulate the signal pathway in cells not only as a secondary messenger but also through direct interactions with the phospholipid bilayer. The

approach used in the thesis also represents an important advance, as it couples the use of nuclear magnetic resonance (NMR) to the analysis of signaling phenomena in living cells. Moreover, the thesis optimizes the Nanodisc assembly protocol, which can broaden its range of applications in membrane protein studies. A preliminary study on the structure of dengue virus NS2B-NS3p in complex with aprotinin, which may help to develop new drugs against the dengue virus, is also included.
