Manuel Prieto is Full Professor of IST, Universidad de Lisboa, and his PhD was obtained at the same institution (1981), on research on fluorescence, colloidal systems, and spectroscopy.
Later he centered his work on biological systems, and his present research interests are deeply focused on Membrane Biophysics specifically lipid domains (rafts), lipid-protein interaction, amyloid fiber formation, lipid phase diagrams, oxidized lipids and ceramides.
For the above studies, the group has a high expertise and attained international recognition on time-resolved fluorescence methodologies, and also advanced microscopy approaches, such as FCS, FLIM, FAIM, FLIM/FRET.
Manuel Prieto was a founder element of the Portuguese Biophysical Society, and has collaborated intensively with international organizations, namely Science Europe, is former President of EBSA (European Biophysical Societies' Association), and President-Elect of IUPAB (International Union of Pure and Applied Biophysics), and also Honorary Fellow of SBE ("Sociedad de Biofísica de España"). He is the recipient of several national and international awards, and very active on Science Outreach activities, both in Portugal and Latin-America.

Seminario: Proteins on membrane interfaces: Structure and dynamics of lipid-protein fibers from advanced FRET methodologies and microscopy.

Resumen: The aggregation of proteins/peptides on the surface of biological membranes has been receiving growing attention since several studies have reported that lipid/water interfaces can promote the self-assembly of amyloidogenic proteins/peptides into a rich β-sheet structure by acting as two-dimensional conformational catalysts. In addition, it has been proposed that membranes containing negatively charged phospholipids can also trigger rapid "amyloid-like" fiber formation by a variety of non-amyloidogenic proteins/peptides, such as cytochrome c and lysozyme. To obtain information about the factors that govern the formation of these supramolecular assemblies, we have been using hen egg white lysozyme (Lz) as a model protein in our on-going research on lipid-protein interaction studies. Here, we will discuss the molecular details gained about these mesoscopic structures from using a combined set of different fluorescence techniques performed both at the macroscopic and microscopic levels (ensemble-average liposome and single-fiber studies, respectively). Lz interaction with anionic lipid vesicles was first studied using both steady-state and time-resolved fluorescence techniques. The biphasic variation of the mean fluorescence lifetime of Lz fluorescently-labeled with Alexa 488 (Lz-A488) as a function of the surface coverage of the liposomes was quantitatively described by a three-state model. This cooperative model assumes that monomeric Lz molecules partition into the bilayer surface and reversibly assemble into oligomers with k subunits (k 6). The global fit was done using the partition coefficients previously determined by FCS and by taking into account electrostatic effects by means of the Gouy-Chapman theory. The oligomer stoichiometry was further narrowed down to $k = 6 \pm 1$ by homo-FRET measurements, which takes into account the binomial distribution of fluorescently-labeled monomers among the oligomers. FLIM-FRET studies and 2PE generalized polarization measurements of Laurdan incorporated in the mixed lipid-protein fibers produced at a low L/P ratio will also be discussed.

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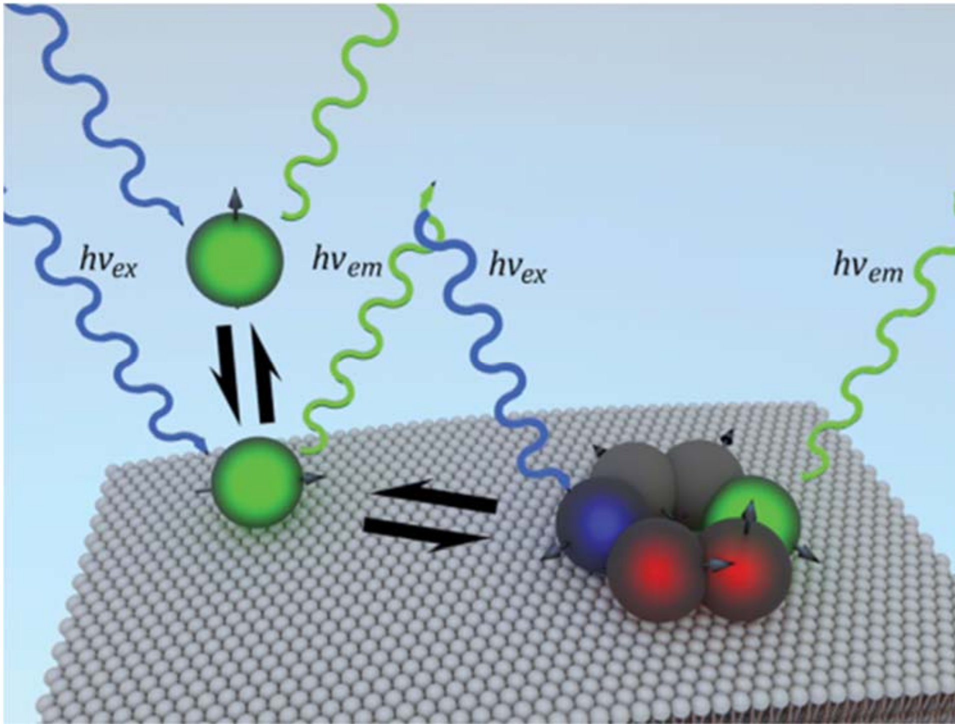

Legend: Energy Migration (homo-FRET), allows to determine the extent of oligomerization of a protein upon interaction with a membrane.