



24<sup>th</sup> June, 12:00

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### ***Lipid membranes – intentionally or not, always a target***

It will be my purpose to take you into a journey along my past, present and future research. My scientific interest has always been centred on understanding the biophysical properties of lipid plasma membranes and how they can determine its interaction with small molecules. As the barrier that assures the homeostasis of the cell, the plasma membrane is a constant target for many different molecules, either produced endogenously or, for example, supplied in food or medical/pharmaceutical formulations. It will be shown how to tackle at the molecular level the distinct and complex effects that small biologically relevant molecules can have in the organization of lipid membranes. New antitubercular compounds are being studied regarding their interaction with human serum albumin and ability to cross the different membrane barriers they must cross upon reaching its target, catalase-peroxidase enzyme KatG, inside *Mycobacterium tuberculosis*.

The plasma membrane of fungi differs from that of mammals by the presence, under physiological conditions, of highly rigid gel domains different from the most typical liquid ordered phase, the so-called lipid rafts. To carry out an extensive characterization of the fungal plasma membrane, *Saccharomyces Cerevisiae* will be exploited as a unicellular fungus. To understand the forces that are responsible for its organization, dynamics and function is one primary goal. The other is to clarify how this relates with fungal resistance or sensitivity, which is of pivotal importance since fungal infections and multidrug resistance together with the lack of effective alternative antifungal agents is a major health concern with vast social economic impact also through food losses.