Nanodomain formation in the lipidic bilayer, origin, modulation and biological relevance.

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Since the proposal of the fluid mosaic model of the cell membrane by Singer and Nicolson (Singer and Nicolson 1972) our understanding of the role of it has changed considerably. From an inert matrix simply enclosing the cell, to a complex system where many biological processes occur, with the participation of the membrane, through its composition, structure and dynamics (Nicolson 2015; Troeira Henriques and Craik 2017; Desai and Miller 2018; Escribá and Nicolson 2014). It is now clear that the lipid bilayer is far from a homogeneous material, depending on its composition it can have domains with different properties, affecting the development of biological processes (Dos Santos et al. 2017). Recently Molecular Dynamics simulations have been used to study membranes at the molecular level, and certainly domains have been a sustained interest. In this talk we will be presenting MD studies of membrane systems as well as experimental results that help us to understand these formations and their biological relevance.