USC UNIVERSIDADE DE SANTIAGO DE COMPOSTELA

CiQUS
Centro Singular de Investigación en Química Biolóxica e Materiais Moleculares

Seminario Grupo Pablo delPino

Título: Biological identity of nanomaterials: structural characterization at the bio-nano interface

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Aula de Seminarios do CIQUS

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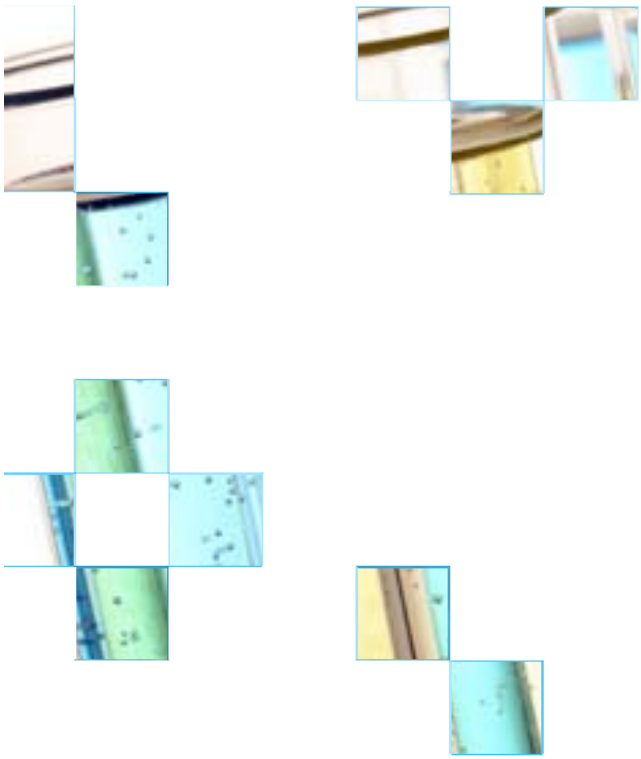

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Tittle: "Biological identity of nanomaterials: structural characterization at the bio-nano interface"

Abstract: Both synthetic nanoparticles in biological environment, as well as naturally occurring biomolecular assemblies, are known to form a sufficiently long-lived and well-organized 'corona' of biomolecules that confer a biological identity to the particles. This biomolecular corona contains all of the relevant information to understand their biological behavior. Certain sequences of these (bio-) molecules presented on their surface are implicated in specific cellular responses (for example uptake by a specific receptor pathway), cell signaling or other biological processes such as activation of the immune system. Characterizing in molecular detail the information encode at the surface of these nanostructures in a realistic environment is crucial to understand the link between the presentation of certain molecules and their biological outcomes, such as specific cellular responses (uptake via specific receptors). Moreover, the organization and arrangement of these molecules on the surface could be interpreted in a different way leading or in response to specific biological process. The development of platforms for screening the exposed markers or epitopes of biomolecules on the surface of nanoparticles in realistic scenarios is crucial to understand how this biomolecular corona determines the nanoparticle-cell interactions, design new nanomaterials suitable as theranostic agents for nanomedicine.

Short CV: Ester Polo obtained her PhD at the Instituto de Nanociencia de Aragon (University of Zaragoza, 2013) between the groups of Dr. Jesus M. de la Fuente and Prof. Jesús Santamaría. Her doctoral thesis involved the design of nanoimmunoconjugates (based on plasmonic

nanoparticles) to develop optical biosensors for cancer marker detection. After a postdoctoral stay at the same institute she moved (2013) to the Centre bio-nano interactions (Dublin) led by Prof Kenneth Dawson, where she is currently working as a senior researcher, focusing on developing new platforms that allows the study and in situ characterization of NPs under relevant biological media, gaining knowledge at the bio-nano interface and understanding the interactions between NPs and cellular membranes and biological barriers

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