Biophysical studies on the interaction between amyloid peptides and natural compounds with lipid membrane models

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The purpose of this interdisciplinary seminar is to present recent studies on the interaction of salmon calcitonin (an amyloid peptide used as a drug in hypercalcemia associated with malignant tumors, hyperparathyroidism, osteoporosis, Paget and Sudeck diseases) with a neuronal membrane model mimicking the so-called "lipid rafts" in the framework of a project financed by Universidad de Antioquia in collaboration with University “La Sapienza” and National Institute of Health in Rome. Experimental approaches will be based on Langmuir films for thermodynamic studies, Atomic Force Microscopy (AFM) and other biophysical techniques to shed light on the role played by the ganglioside GM1. In addition, experimental studies on the interaction of amyloid beta 1-40 (amyloid peptide involved in Alzheimer's disease) and natural compounds (e.g. Tea Tree Oil, extracted from the Australian *Melaleuca alternifolia* Cheel) with human resistant melanoma cell lines and models of cell membranes containing cholesterol will be presented. In conclusion, other research interests and topics that Dr. Giordani is developing with local and international partners will be shown.

Keywords: amyloid peptides, membrane models, lipid-rafts, ganglioside GM1, natural products, AFM, Langmuir films.

Short introduction of Dr. Giordani:

Dr. Cristiano Giordani is graduated from “La Sapienza” University of Rome (Italy) with a Laurea Degree in Physics (specialized in Biophysics) and a Ph.D. in Physical Chemistry from Kyoto University (Japan) in 2007. Since 2014 is Assistant Professor at the Universidad de Antioquia in Medellin, Colombia. Dr. Giordani has pre- and post-doctoral experiences in Italy, Great Britain, Ireland, Saudi Arabia and Switzerland and global scientific contacts.

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