

Title:**Biotechnological applications at GBMI: Industry-driven “bio-research”**

Presenter:

Tzanko Tzanov and Pere Garriga*

Abstract:

The “Grup de Biotecnologia Molecular i Industrial (GBMI)” at the Chemical Engineering Department of UPC is a multidisciplinary research group combining basic and applied research in the fields of biotechnology, molecular biology, polymer engineering and genetic engineering. The main goal of the Molecular Biotechnology team, within the GBMI group, is the study of membrane proteins and particularly the G-protein coupled receptors (GPCR), a superfamily of receptors involved in a vast number of physiological processes and with high relevance as pharmacological targets. Specific receptors studied include the visual pigment receptors (rhodopsin and cone pigments), the acetylcholine muscarinic receptors, and the galanin and serotonin receptors. In the field of visual phototransduction, we are interested in elucidating the effect of mutations in photoreceptor pigments associated to retinal diseases, such as retinitis pigmentosa and congenital night blindness. In the case of the acetylcholine muscarinic receptors we are interested in their involvement in the pathophysiology of Alzheimer’s disease. The potential role of galanin and serotonin receptor heterodimerization is also studied with regard to its potential involvement in depression. The goal of the Applied Biotechnology team is to meet the research with the industry and the market by developing new bio-based or biomimetic technologies and high added value products. The “bio” component is an integral part of our research – bio-tools (enzymes), bio-processes and bio-materials are used to design functional coatings and textiles, cosmetic formulations, nano/micro drug delivery systems, medical and diagnostic devices, antimicrobial/antibiofilm strategies and bioactive and composites materials. We provide biotech alternatives for material development and improvement of industrial processes in terms of efficiency, environmental impact, energy consumption, and product performance working at the interface of biotechnology, materials science, physicochemistry and polymer engineering. Our strong biotechnological background is reflected in our participation in several international projects funded by both industry and public bodies, all of them sharing the common aim of providing differently sized industrial partners with biotechnological solutions for their specific production/consumption bottlenecks.

*GBMI - Grup de Biologia Molecular i Industrial, Departament d'Enginyeria Química, Universitat Politècnica de Catalunya