Institute of Biology, Medicinal Chemistry & Biotechnology

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Reconstructing interfacial signaling using biosensors: insights into PI3K regulation

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At 12:00

NHRF seminar room

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Title of the Talk

"Reconstructing interfacial signaling using biosensors: insights into PI3K regulation"

Short Abstract

In an effort to reconstruct functional, proximal signaling complexes on the membrane *in vitro*, we have developed state-of-the-art surface plasmon resonance (SPR) technology for real time investigation of protein-membrane interactions. I will demonstrate the feasibility of the technology by showing specific recognition of antibodies to epitope-labeled liposomes. I will then move on to show our exploratory studies of the interaction of PI3Kα (phosphatidylinositol-3-kinase-α), a key lipid kinase in many cancer types, with liposomal membranes derived from cancerous cells. Certain oncogenic PI3Kα mutants, like the H1047R mutant, are thought to have altered membrane binding efficiency, leading to gain-of-function. To test this hypothesis, we compared direct, real time membrane binding of recombinant human wild type and H1047R PI3Kα. Our biosensor results support the gain-of-function hypothesis. Further investigation demonstrated the effect of inhibitors and suggested avenues for the design of novel therapeutics.