Claude Prigent, J Mol Biomark Diagn 2014, 5:2
http://dx.doi.org/10.4172/2155-9929.S1.021

OMICS Group Conferences
Accelerating Scientific Discovery

5th International Conference on
Biomarkers & Clinical Research
April 15-17, 2014 St. Hilda's College - University of Oxford, UK

Aurora-A kinase in cancer: Detection & inhibition

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Aurora-A kinase is involved in many events controlling cell division specifically during mitotic progression. The protein is overexpressed in various cancers, and its gene amplified in some of them. As many protein kinases, Aurora-A must be phosphorylated in its activation loop on T288 to be active, and an antibody detecting phospho-T288 is now available and often used to estimate Aurora-A activity in cells. I will demonstrate that this phosphorylation event cannot be used as readout to measure Aurora-A activity *in vivo*.

My laboratory has set up a new approach to specifically inhibit Aurora-A activity in cells. I will demonstrate how this approach can be used to estimate the specificity of Aurora-A inhibitors developed by pharmaceutical companies to be used in chemotherapy.

Biography

Claude Prigent is the Director of Microscopy- Rennes Imaging Center and Head of the Cell Cycle team at Research CNRS at Univ Rennes1, France. He is studying mechanisms that regulate different aspects of mitosis. He is particularly interested in the main mitotic structures, which are the centrosomes, the mitotic spindle and the chromosomes. For instance, he is asking questions like how centrosome maturation proceeds, how bipolar spindles assemble and how chromosomes condense. In parallel, he is also studying regulatory mechanisms such as cell cycle checkpoints, in relation with DNA repair and sister chromatid cohesion. He is currently focusing on late mitotic events, post metaphase stages. The approaches we use to unravel these mitosis mysteries mainly focus on post-translational modifications of proteins. In particular, they invest a lot of energy to uncover the role of phosphorylation, and ubiquitination, in the regulation of mitosis. His team is also deeply engaged in cancer research. Indeed, defects in cell cycle controls are frequently associated with human cancers, and the proteins that regulate cell cycle appeared to be excellent targets for drug design. Not only do they search for inhibitors of cell cycle controls but also they try to understand how misregulation of these control mechanisms participates to carcinogenesis.

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