Abstract BIOSS Seminar 24.05.2011

Oncogenic signalling complexes

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We investigate the mechanisms by which mammalian cells convert extracellular information into intracellular signalling networks. In particular, we are interested in the mechanisms underlying the fine-tuning of MAPK and PI-3K pathways. These pathways play a pivotal role in growth control and differentiation and are often dys-regulated in cancer. We are particularly interested as to how the core components of these pathways are regulated by protein-protein interactions, feedback loops and crosstalk events. In our projects, we employ a bottom-up approach in that sense that we map and functionally characterise phosphorylation and protein-protein interaction events in space and time for critical signalling elements such as the B-Raf kinase and the Gab2 docking protein. These studies will provide a deeper insight into disease mechanisms and the mechanisms underlying the success or failure of drugs. In collaboration with our clinical partners, we are also characterising novel tumour-associated mutants of signalling proteins.