

**P012** Interaction networks and signalling pathways for modelling inflammation-dependent cell migration.

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Recruitment and migration of leukocytes from the blood to tissue sites form a crucial part of inflammatory processes and host response to infection. Inappropriate leukocyte activation and recruitment leads to chronic inflammatory diseases that includes asthma, arthritis and atherosclerosis. The control of leukocyte migration is triggered by inflammatory signals from the extracellular environment and is coordinated by an interplay of a number of intracellular signal-transducing components within a complex network of interconnected and closely coupled pathway modules. Mapping and understanding these interconnections or 'cross-talks' between pathway modules are critical towards creating predictive models of cellular behavior from a systems-wide perspective, which is a result of the collective spatial-temporal dynamics of the interacting components. Our approach has been to examine in the context of network data and protein interaction information, biologically relevant systems in physiology and its associated pathological states when control is deregulated or perturbed. Because the systems behaviour of networks depends not only on its topology but also on the details of specific kinetic parameters and information about temporal and spatial states in which cellular interactions occur, we have adopted an integrative approach towards incorporating the relevant quantitative data from directed biochemical and physiological studies into our knowledgebase of signalling pathways and interaction networks involved in inflammation-dependent leukocyte migration for in-silico modelling.