

P037 How novel Ca^{2+} sensors regulate Ras signalling in live cells
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Recently Ca^{2+} has been directly implicated in the control of Ras activity by the discovery of twin Ca^{2+} -triggered Ras GTPase-activating proteins (GAPs): Ras GTPase-activating-like (RASAL) and Ca^{2+} -promoted Ras inactivator (CAPRI). Concurrently, a family of diacylglycerol (DAG)-regulated Ras guanine nucleotide exchange factors (GEFs) has been characterised (GRP/CaIDAG-GEFs) along with an isoform of phospholipase C (PLC ϵ) that operates as a Ras/Rap/Rho effector. Thus, a battery of potential Ras signalling modulators has converged with PLC-dependent pathways. These molecules are modifying the view of how receptors signal to Ras activation, highlighting the role of 'non-kinase second messenger signalling' for mitogenic stimulation.

We have been analysing the GAP function of CAPRI and RASAL in live cells using cellular reporter assays of the Ras activation state, combined with spatio-temporal analysis of Ca^{2+} -triggered CAPRI/RASAL translocation. Our work demonstrates that CAPRI and RASAL play novel roles in the information processing of Ca^{2+} signals at the level of the Ras GTPase.