

S007 Imaging the cAMP-dependent transduction pathway
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It is becoming increasingly evident that the compartmentalization of proteins within specific regions of the cell is pivotal to the appropriate functioning of the cAMP/PKA pathway. The machinery that underpins compartmentalized cAMP signalling is only now becoming appreciated. Adenylyl cyclases are localized at discrete parts of the plasma membrane and phosphodiesterases (PDEs) can be targeted to selected sub-cellular compartments. PKA isoenzymes bound to AKAPs (A-kinase anchoring proteins) then serve to anchor PKA close to specific targets, resulting in selective activation. Evidence is also accumulating proving that the freely diffusible second messenger cAMP can transduce specific responses by localized signalling. By using a FRET-based, real-time imaging approach we are studying the spatio-temporal dynamics of cAMP in intact living cells and the mechanisms responsible for compartmentalized cAMP signalling.