A-Kinase anchoring Protein scaffolds: changing partners for different roles

♠Jacinta S. D'Souza*, Amruta A. Shendge, Raza Ali Jafri, Sneha Desai

UM-DAE Centre for Excellence in Basic Sciences, School of Biological Sciences, University of Mumbai, Kalina campus, Santacruz (E), Mumbai-400097
*****Correspondence: jacinta@cbs.ac.in

To find the role of signalling proteins in cellular motility, we have identified four non-conventional AKAPs and two RII-like proteins in four different projections of the central pair apparatus of *Chlamydomonas* cilia. DPY-30 in C1a binds to PF16 and Myc-Binding Protein-1 orthologue (Flagellar Associated Protein 174, FAP174) in C2a, C1b, and C1d-e-f projections binds respectively to FAP65, CPC1 and FAP297. The non-conventional partners are currently being investigated for key features to understand the functioning of these signalosomes. The dimerization domain (aa 1-22) of FAP174 interacts with both the amphipathic helices of FAP65, an A-Kinase anchoring protein. The first 4 ASH domains of FAP65 interact with tubulin, probably a substrate for anchorage. FAP147, an orthologue of Myc-Binding Protein-Associated Protein also binds to the C-terminus of FAP174. FAP147, although not a canonical protein kinase, exhibits PKA-like activity. Interestingly, FAP174 also binds to cAMP. This ternary complex is a mimic of the typical AKAP scaffolds that are spread across eukaryotic cells and carry out cAMP-based signalling. In the C1b complex, FAP174 binds to another AKAP, *viz*. CPC1 (central pair complex 1) with an adenylate kinase domain. CPC1, in turn, binds to Adenylate kinase, FAP42 with an ADK activity, making this projection a hub of ATP homeostasis.