The 75th iCeMS SEMINAR

Wed 13 April 2011

10:00–11:00

Molecular assemblies of mesoscale membrane structures involved in cancer

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Venue: Seminar Room (#A207)
2nd Floor Main Building iCeMS Complex 1

The plasma membrane, the outermost surface of eukaryotic cells, contains various mesoscale substructures of invaginations and protrusions, which are associated with endocytosis and cell migration. The diverse members of the BAR domain superfamily proteins have structurally determined positive and negative curvatures of membrane contact at their BAR, F-BAR, and I-BAR domains, which are thought to generate and maintain such curved membranes by binding to the membrane of various subcellular structures. Importantly, the SH3 domains of the BAR domain superfamily proteins bind to the actin regulatory WASP/WAVE proteins, thereby connecting WASP/WAVE proteins to specific membrane curvatures of each subcellular structure. At least these connections were found in endocytosis of clathrin-coated pits and caveolae as well as protrusive structures such as filopodia and lamellipodia. The orientation and extent of filament growth to the membrane could be regulated by these connections specific for each subcellular structure. Furthermore, these BAR domain-mediated protein assembly could regulate signal transduction for cancer cell proliferation and invasion.

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