REGIONAL CENTRE FOR BIOTECHNOLOGY
Seminar series

Single molecule Biology: a new perspective for biology

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12:00 noon
Seminar Room

Biology is the culmination of many singular events like the generation of 'a' mRNA from 'a' DNA by 'a' RNA polymerase. Yet, our understanding of most biological processes comes from ensemble studies of the molecules carried out in a tube or using reporters in cells and organisms. Detailed mechanistic understanding of all biological phenomena is complicated by the heterogeneity among biomolecules, transient nature of interactions and limits on detection of small number of molecules. Current techniques that probe single molecules have remained largely restricted to purified recombinant proteins in vitro and hence been limiting in their impact. We have developed two fluorescence microscopy technologies that now allow us to detect even a single fluorescent protein or dye molecule attached to biomolecules in living eukaryotic cells. Applications of these methods allow us to investigate molecular diffusion and interaction of biomolecules and super-resolution imaging of cellular components in vivo.