

**Speaker: Dr. Arnob Dutta**

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***Venue: L-1/Seminar hall, ITI-Campus***

**Title: Multiple mechanisms to regulate the Swi/Snf chromatin remodeler**

**Abstract:** The Swi/Snf chromatin remodeling complex functions to alter nucleosome positions by either sliding nucleosomes on DNA or the eviction of histones. The presence of histone acetylation and activator dependent recruitment and retention of Swi/Snf are important for its efficient function.

It is not understood however, why such mechanisms are required to enhance Swi/Snf activity on nucleosomes and what mechanisms regulate release of Swi/Snf from genes. We show that Snf2, the catalytic subunit of the Swi/Snf remodeling complex is a target of the Gcn5 acetyltransferase. Our study finds that acetylation of Snf2 regulates both recruitment and release of Swi/Snf from stress-responsive genes due to intramolecular interaction of Snf2 bromo-domain with the acetylated lysine residues on Snf2. This interaction negatively regulates binding and remodeling of acetylated nucleosomes by Swi/Snf. Interestingly, the presence of transcription activators mitigate the effects of the reduced affinity of acetylated Snf2 for acetylated nucleosomes. Our studies demonstrate that competing effects of 1) Swi/Snf retention by activators or high levels of histone acetylation and 2) Snf2 acetylation-mediated release regulate dynamics of Swi/Snf occupancy at target genes.

In addition we find that subunits of the Swi/Snf complex play critical roles in regulating complex stability and gene expression. Our findings have direct bearing on understanding how mutations in orthologous sub-units of hSwi/Snf that are affected in cancer may regulate altered functioning and regulation of gene expression.