

Speaker:

Derek Goto

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Title:

**“Regulation of Heterochromatin
Formation in Fission Yeast”**

Summary:

Heterochromatin represents the highly condensed, transcriptionally quiescent portion of the genome composed primarily of transposons and repeat sequences. It is marked by specific epigenetic modifications, including methylation of histone H3 at Lys-9, which confer heritable changes in gene expression without involving an alteration in DNA sequence. Heterochromatin is essential for correct chromosome segregation, centromere function and nuclear organization, and is also important for epigenetic regulation of euchromatic gene expression. Similar to higher eukaryotes, the centromeres of *S. pombe* contain outer repeat sequences (*dg* and *dh*) that are heterochromatic and flank the central kinetochore domain. In wild-type cells, non-coding RNAs derived from the repeats are transcribed and processed by RNAi. This promotes methylation of histone H3 lysine 9 and the formation of epigenetically silent heterochromatin. We are currently investigating the mechanism(s) by which RNAi is involved in epigenetic modifications to the region being targeted for heterochromatin formation. Genes that may mediate this process are being identified using a combination of genetic and bioinformatic approaches. We are also carrying out detailed profiling of centromeric heterochromatin in known mutants in order to further understand how the respective proteins interact genetically. Preliminary data from this work will be discussed.

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