



## DNA Demethylation during Zebrafish Development and Colon Cancer

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Seminar Room

DNA methylation is an epigenetic modification which is critical for normal development and seems to be misregulated during carcinogenesis. Here I will present data which suggests new roles for DNA methylation during development and colon cancer. A long standing hypothesis in the field has been whether DNA methylation on specific genes promotes tissue-specific development. Our work utilizes zebrafish model to show that indeed DNA and histone methyltransferases have different tissue-specific and temporal roles during organ development.

Next, I will show data which directly address mechanism of active DNA demethylation, a central question in the field. We have provided evidence for a mechanism which relies on co-operative actions of a DNA deaminase, a glycosylase and a DNA repair protein. We have identified a crucial role for DNA demethylation in adenoma formation during colon carcinogenesis. Our data suggest that DNA demethylase maintains colon progenitor cells in an undifferentiated state following loss of APC, the initiating event during colon carcinogenesis. Finally, I will discuss a research program that I have been developing for gaining insight into epigenetic processes in melanoma metastasis.