

Wednesday, October 25, 2017

LSC 3 | 12:00 - 1:00PM



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“Biological outcomes of the catalytic specialization of DNA methyltransferases “

The overarching goal of our research is to elucidate fundamental epigenetic mechanisms that control cell identity and are disrupted in various cancers. My lab uses mouse embryonic stem cells and embryonal carcinoma cells as a model system to determine the mechanisms that control Dnmt3a and 3b activity at the regulatory elements, particularly enhancers and insulators, of developmental genes. Our current projects include the elucidation of the role of chromatin configuration (enhancer-promoter interactions) in regulation of Dnmt3a and 3b activity. We are also studying the co-regulation of Dnmt3b inducible expression by its upstream enhancer and divergent lncRNA. These projects are an extension of our recently published studies demonstrating the role of the histone-modifying complex in regulation of Dnmt3a activity at pluripotency gene enhancers during ESC differentiation and our data show potential disruption of this mechanism in testicular carcinomas. We also elucidated critical biochemical differences between Dnmt3a and Dnmt3b enzymes that can potentially influence their unique roles in cancer progression.

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