

Title: Dynamic reorganization of intra-chromosomal domains accompanies signal induced lactogenic differentiation of mouse mammary epithelial cells

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Abstract of the talk: Accumulating evidence from the studies on spatial organization of genome and gene expression indicates that, cell-type specific, non-randomly arranged interphase chromosomes are partitioned into hierarchical, self-interacting multi-mega-base length, sub-chromosomal domains of which at micro, meso and macro scale referred as Topological Associated Domains (TADs), meta and super domains respectively. TADs were shown to be cell-type invariant and evolutionarily conserved but a few studies suggest an extensive rewiring within TADs to enable differential expression of genes. In this study, by employing in-nucleus Hi-C and global gene expression profiling by RNA-seq, we have systematically studied the Glucocorticoids and Prolactin (Prl) hormonal signal-induced chromosomal dynamics and differential expression of genes during lactogenic differentiation of mouse mammary epithelial cells. Contrary to the earlier observations, we show an extensive reorganization, not only at the level of TADs but also at chromosomal meta domains during lactogenic differentiation. Further we show that glucocorticoid signaling induces remodeling and promotes intra-chromosomal clustering of meta-domains which seems to act synergistically with Prolactin signaling in coordinating lactogenic differentiation specific gene expression patterns.