MPI-NAT SEMINAR SERIES

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Probing the connections between chromatin architecture, gene expression and enhancer activity

Mammalian SWI/SNF chromatin remodeling complexes move and evict nucleosomes at gene promoters and enhancers to enable transcription machinery access to DNA. Mutations within SWI/SNF are common in disease, but how SWI/SNF controls gene activity remains unclear. Here, we use a fast-acting catalytic inhibitor to elucidate the direct effects of SWI/SNF-mediated chromatin remodeling. SWI/SNF inhibition causes a rapid and global loss of chromatin accessibility at both promoters and enhancers, with concomitant widespread suppression of transcription initiation. Promoters exhibit varied abilities to recover activity in the absence of SWI/SNF remodeling, with compensation mediated by EP400/TIP60. In contrast, enhancers do not recover, suggesting disruption of promoter-enhancer communication upon perturbation of SWI/SNF. These findings clarify SWI/SNF function and uncover predictive molecular characteristics at promoters that define SWI/SNF dependence.

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Host: Patrick Cramer

online

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