

Penn Bioinformatics Forum



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“Loop extrusion with barriers as a genomic communication system”

Wednesday, February 3, 2021

3-4 pm

Talk to be held online

Zoom link:

<https://penmedicine.zoom.us/j/98182903599?pwd=VHRLSEwrc2pzek5FY1pycHJxTEsYUT09>

Meeting ID: 981 8290 3599

Passcode: 620312

Abstract: There is now strong support for the process of cohesion-mediated loop extrusion delimited by CTCF barriers as a major mechanism of interphase chromosome organization in vertebrates. However, the role of loop extrusion in mediating functional interactions is still controversial. Here we explore how loop extrusion with barriers may influence regulatory communication. Our models and analysis of Hi-C and Micro-C data expands the current paradigm by demonstrating that CTCF plays a dual role as both insulators and facilitators of contacts. We propose that the system of extrusion with barriers enables a “dock-and-scan” strategy to mediate targeted functional interactions between specific elements. Taken together, our results replace the picture of TADs as isolated regulatory neighborhoods, with a landscape of oriented genomic communication lines established by extrusion barriers of varying strength.