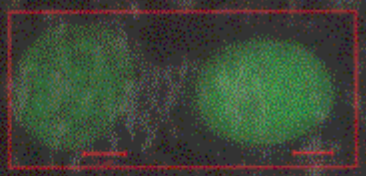
Nuclear Mechanics and Genome Regulation



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In recent years we have begun to appreciate the impact of cellular geometry on nuclear mechanics and genome regulation. Genome assembly is spatially and functionally organized within the 3D architecture of nucleus of living cells and recent evidence suggests that the mechanical architecture of the cell nucleus is central to determining genome function, but yet the underlying principles are unclear. Novel live-cell imaging, micromanipulation and functional screening methods have begun to provide glimpses of nuclear mechanics – central to describing genome function during cellular differentiation and developmental programs. In addition a growing number of diseases are being associated with altered nuclear mechanics. This comprehensive volume will serve as a valuable resource to researchers in this emerging frontier in Cell Biology.

KEY FEATURES

- Covers both methods and advances in our understanding of the spatio-temporal organization of genome assembly, its integration to mechanical properties of the cell nucleus and how mechanoregulation of gene function may be defined in interphase cells and during their differentiation and development
- Cutting-edge research relevant to researchers in the field of nuclear mechanics and genome regulation

Cover image: Linker histone, a critical determinant of genome packaging and cellular homeostasis, diffusion reveals two distinct timescales. (Left) Fluorescence images of H1.1-EGFP and (right) tailless H1.1-EGFP transfected HeLa nucleus (scale bar ~ 5μm).

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