
Epigenetics switches chromosomes from polymer to copolymer physics

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Abstract

No doubt chromosomes are polymers, however to what extent are they? It has been argued that mammalian chromosomes are bound to be entangled because of their huge size, unless they are folded in non equilibrium states (e.g. fractal globules). The recent findings of epigenetic "colour domains" together with the so-called "topologically associating domains" (TADs) give a twist to this picture. I will review the most recent physical models of these epigenetic features in the framework of the coil-globule transition and underline the dramatic finite-size effects associated with. I will discuss the functional outcomes of this new picture.

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