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“The Physics of Chromosomes: Loops and Entropy, that's what it's all about”

In vivo, chromosomes due to dynamic association with protein factors fold to form three-dimensional structures. Many experiments have paved the way to understand folding and the nuclear architecture of the genome for at least in eucaryotes but also beyond. Based on these experiments and models a fundamental understanding of the key principles that drive the physical organization has become possible through the concepts of loop and entropy. Using the concept of loop, models are now able to reproduce the results from several of the experiments within the framework of loop and entropy. Linking biological unction to structure they moreover are able to make predictions.