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*Processes of topology simplification in biology*

Important Biological processes such as replication, transcription and recombination involve global topological changes of long DNA molecules. Circular DNA adopts different topological conformations in the cell, negative supercoiling being its preferred, native state. There is evidence that knots inhibit replication and transcription, and it is known that links with two or more components prevent proper segregation at cell division. The cell has thus devised ways to reduce topological entanglement. I will talk about recent models of DNA unknotting and unlinking both from a biological, a mathematical and a computational point of view.

This is joint work with J. Arsuaga, I. Grainge, X. Hua, D. Sherratt and S. Trigueros.