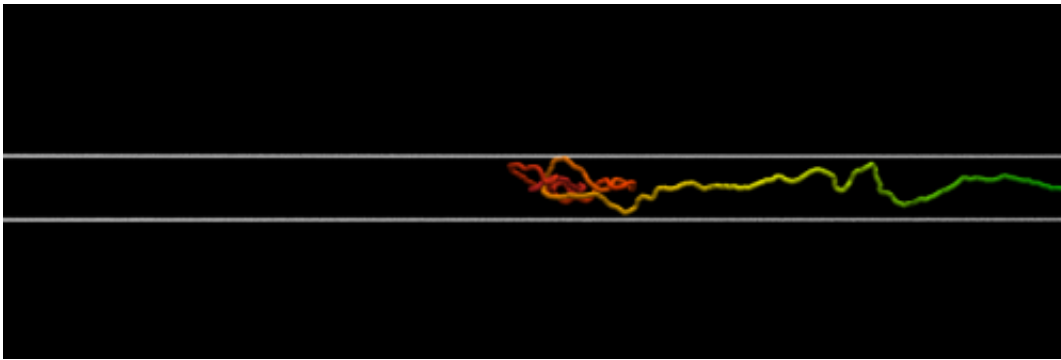


Relaxing DNA strands by using nano-channels

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DNA in a nanochannel. Credit: SISSA

A simple and effective way of unravelling the often tangled mass of DNA is to 'thread' the strand into a nano-channel. A study carried out with the participation of the International School for Advanced Studies in Trieste used simulations to measure the characteristics that this channel should have in order to achieve maximum efficiency.

With the widespread use of methods for DNA analysis and manipulation, it's certainly useful to find a way to unravel and relax the strands of this molecule that tends to form tangles spontaneously. One way is to use channels, or rather nano-channels, as Cristian Micheletti, SISSA research scientist, and Enzo Orlandini, of Padua University, did in a study just published in the journal *Macro Letters*.

The idea is to force the DNA into the [channel](#) so as to relax it completely. "But not just any channel will do," explains Micheletti. "Depending on the diameter of the nano-channel, the strand extremities can arrange into hook-like structures that will end up forming a knot".

"In our study we used simulation techniques to characterise the mechanisms leading to knot formation as a function of the diameter of the channel", Micheletti continues.

Provided by International School of Advanced Studies (SISSA)

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