

RECENT PROGRESS IN DOUBLE HELIX CONJECTURE

You Cheng Xu¹ & Xin Yuan Liu²

¹Internal Medicine, University of Texas Southwestern Medical Center at Dallas, United States of America

²State Key Laboratory of Cell Biology, Institute of Biochemistry and Cell Biology, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai, China

ABSTRACT

It is generally assumed that DNA structure has been solved by Watson-Crick in 1953. However, the finding of zero linking number topoisomer indicated that the winding direction inside the double helix should be ambidextrous, rather than plectonemic. Hence, a double helix conjecture was proposed that in any kind of plasmid a zero linking number topoisomer, i.e., a non-linked plasmid, could be found. By denaturing and renaturing plasmid in various different ways, the topological transformation of the DNA was observed by agarose gel electrophoresis. We found that the two strands of a covalently closed circular DNA molecule can be completely dissociated under very mild conditions and this dissociation is reversible. The experimental phenomena indicated that two strands of DNA are unlikely winding right-handedly as in the canonical double helix model. It paves the way for the demonstration of the double helix conjecture which would provide solid evidence to amend the Watson-Crick Model.

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