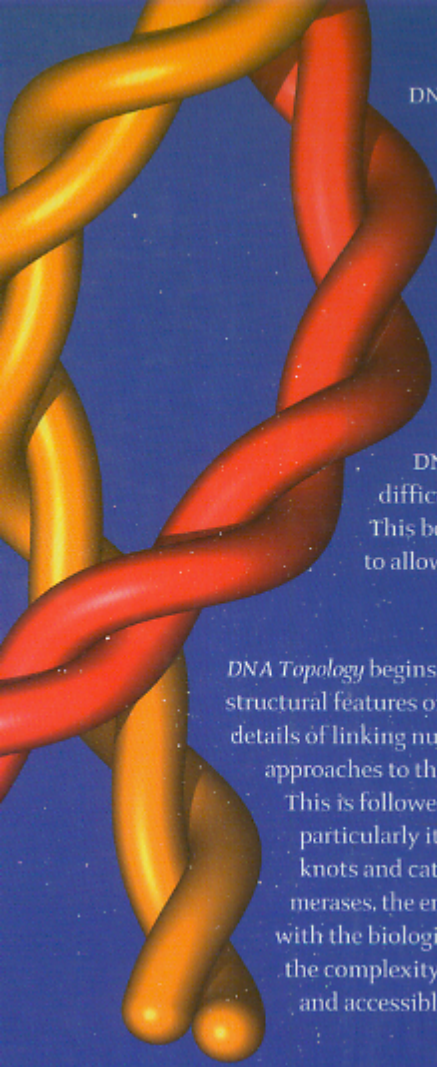

DNA is a molecule of intense interest in the 21st century, with the human genome and those of many organisms having been sequenced. The double helix structure discovered by Watson and Crick 50 years ago is now very familiar, and its importance for DNA function is widely appreciated. However, it has become clear that there are many variations on this basic structure and that these can have important biological consequences. Prominent among these are the 'topological' configurations: supercoiling, knotting, and catenation (linking). A full understanding of these features of DNA structure requires a grasp of concepts that can prove difficult for both students and more advanced researchers. This book aims to explain these ideas simply, but rigorously, to allow a wider appreciation of DNA topology.

DNA Topology begins with an account of the primary and secondary structural features of DNA before dealing with DNA supercoiling and the details of linking number, twist, and writhe, and practical and theoretical approaches to the conformation and free energy of supercoiled DNA. This is followed by a discussion of DNA lying on a curved surface and particularly its application to the nucleosome, then an account of knots and catenanes in DNA. The final chapters deal with topoisomerases, the enzymes that control DNA topology, and, most importantly, with the biological significance of topological aspects of DNA. Despite the complexity of some of these concepts, they are presented in a clear and accessible way, drawing on interesting and relevant examples.