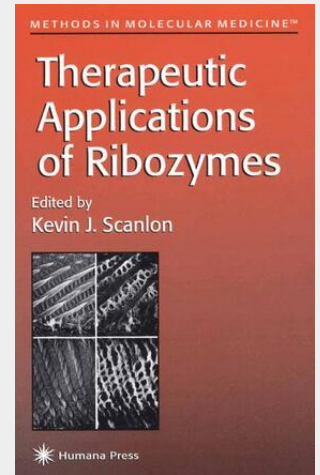


Therapeutic Applications of Ribozymes

The purpose of Applications Therapeutic of Ribozymes is to provide an overview of the utility of ribozymes to selectively inhibit the expression of RNA. The ribozyme applications appearing in this book should benefit not only those experienced in ribozymes, but also those applying this ribozyme technology for the first time. It is hoped that a better understanding of the therapeutic application of ribozymes will have a significant impact on human disease in the near future. The field of ribozyme biochemistry has come a long way since the initial observation that RNA is capable of catalysis, initially in cis during processing of larger molecules and ultimately the use of ribozymes in trans to achieve cleavage of target sequence. The fundamental observation that hammerhead (and subsequently hairpin) ribozymes could be designed to cleave a target messenger RNA, and the clarification of sequence restrictions in both the ribozyme and the target RNA, have paved the ways for the use of ribozymes as a tool to manipulate gene expression at the molecular level. This had previously been a domain of antisense oligonucleotides and triplex DNA. Subsequent studies have explored the myriad biological systems in which ribozyme-mediated inhibition of genes involved in various cellular processes may be used to uncouple important signaling pathways or to reverse the pathologic expression of a pathologic process.

In Therapeutic Applications of Ribozymes, expert laboratory scientists describe in detail their methodologies for constructing ribozymes designed to elucidate the role of specific genes as key routes to the development of novel therapies for a wide variety of diseases. The authors review the many sites targeted with ribozymes in various diseases and provide specific accounts of the practical techniques required for the proper use of ribozymes in these systems. Their cutting-edge protocols demonstrate how to achieve ribozyme expression in distinct cellular systems, the preparation and use of high-efficiency ribozyme DNA or RNA delivery, and the studies required to prove the efficacy of ribozyme-mediated inhibition, with its concomitant effect on phenotypic parameters. Therapeutic Applications of Ribozymes contains all the practical detail necessary to realize the high promise of ribozyme technology as a significant, widely used methodology. Focused on ribozyme targets and the novel associated technology, the book immediately becomes the leading resource for all those seeking to transform this new category of therapeutic agent into efficacious clinical practice.



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