Applied RNAi

From Fundamental Research to Therapeutic Applications

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Since the discovery of RNA interference (RNAi) in 1998, research on the topic has advanced at an impressive pace. Small RNAs, and in particular micro RNAs (miRNAs), play a fundamental role in gene regulation through the activation of RNAi. Detailed insights into the mechanisms of RNAi have led to an improved understanding of gene regulation in normal and disease states, and thereby enabled the exploitation of RNAi for a variety of applications.

In this book an international panel of RNAi experts critically reviews the most interesting advances in basic applied RNAi research, highlighting the applications in RNAi-based therapies and discussing the technical hurdles that remain. Topics covering the fundamental biological aspects of applied RNAi research include: the role of miRNAs in trinucleotide repeat disorders; miRNAs and HIV pathogenesis; miRNAs for epigenetic gene silencing; the role of miRNAs in virus-related cancers; non-canonical miRNA biogenesis. In the area of RNAi-based therapy, topics include: harnessing RNAi for the treatment of viral infections; optimising the design of exogenous RNAi activators; blocking miRNA function with synthetic agents; somatic cell reprogramming; high-content miRNA-based screening tools and the use of miRNA target sites for control of transgene expression.

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