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RNA Editing Current Research and Future Trends

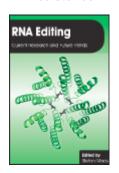
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Cellular editing of RNA can lead to the recoding of expressed sequences before they mature to their functional gene products, such as proteins or regulatory RNAs, and represents a hidden layer of genetic information and regulation. Often, the recoding events are essential for the normal function of the gene product (for example creating an open reading frame), in other cases RNA editing creates additional variation and phenotypic diversity since both the edited and the non-edited versions of the product are functional and co-exist. It is necessary to understand the mechanisms of RNA editing in order to elucidate the overall physiological impact of this phenomenon.

This major new work presents an up-to-date overview of RNA editing. All the chapters here have been written by experts in the various research areas and describe key recent findings as well as exploring current frontiers in the mechanisms and functional roles of RNA editing. The chapters span the editing of protein coding mRNAs, small regulatory RNAs, tRNAs and non-coding sequences. Also included are studies employing bioinformatics to identify and predict RNA editing sites as well as the evolution of RNA modification.

An essential text for anyone interested in RNA editing and modification, RNA structure and function, post-transcriptional regulation, and the regulation of gene expression and a recommended purchase for molecular biology libraries.

Chapter 1. Regulation of Ion Channel and Transporter Function Through RNA Editing. Miguel Holmgren and Joshua J.C.

Rosenthal

Chapter 2. Mechanisms and Functions of RNA Editing in Physarum polycephalum. Jonatha M. Gott

Chapter 3. tRNA Modification and Editing. Bhalchandra S. Rao and Jane E. Jackman

Chapter 4. Coordination of RNA Editing with Other RNA Processes in Kinetoplastid Mitochondria. *Jorge Cruz-Reyes and Laurie K. Read*

Chapter 5. Structural Studies of U-insertion/deletion RNA Editing in Trypanosomes. Blaine H. M. Mooers

Chapter 6. RNA Editing and Small Regulatory RNAs. Bjorn-Erik Wulff and Kazuko Nishikura

Chapter 7. Deaminase-Dependent and Deaminase-Independent Functions of APOBEC1 and APOBEC1

Complementation Factor in the Context of the APOBEC Family. Harold C. Smith

Chapter 8. Identification of RNA Editing Sites: a Survey of the Past, Present, and Future. Meng How Tan and Jin Billy Li

Chapter 9. Regulation of Gene Expression Through Inosine-containing UTRs. Heather Hundley

Chapter 10. ADARs and the Viral Life Cycle. Sara Tomaselli, Federica Galeano, Franco Locatelli and Angela Gallo

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