

Structural and Catalytic Roles of Metal Ions in RNA

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About this Book

The discovery of ribozymes nearly 30 years ago triggered a huge interest in the chemistry and biology of RNAs. Much of the recently made progress focusing on metal ions is addressed in **Volume 9**. This book, written by 28 internationally recognized experts from 8 nations, provides a most up-to-date view and is thus of special relevance for colleagues teaching courses in biological inorganic chemistry and for researchers dealing, e.g., with nucleic acids, gene expression, and enzymology, but also for those in analytical and bioinorganic chemistry or biophysics.

Structural and Catalytic Roles of Metal Ions in RNA describes in an authoritative and timely manner in 12 stimulating chapters, supported by nearly 1600 references, 13 tables, and 75 illustrations, mostly in color, metal ion-binding motifs, methods to detect and characterize metal ion-binding sites, and the role of metal ions in folding and catalysis. It deals with diffuse metal ion binding, RNA quadruplexes, the regulation of riboswitches, metal ions and ribozymes, including artificial ribozymes. The spliceosome, the ribosome, ribozymes involving redox cofactors as well as the binding of kinetically inert metal ions to RNA are also covered.

About the Series

Metal Ions in Life Sciences links coordination chemistry and biochemistry in their widest sense and thus increases our understanding of the relationship between the chemistry of metals and life processes. The series reflects the interdisciplinary nature of *Biological Inorganic Chemistry* and coordinates the efforts of scientists in fields like biochemistry, inorganic chemistry, coordination chemistry, molecular and structural biology, enzymology, environmental chemistry, physiology, toxicology, biophysics, pharmacy, and medicine. Consequently, the volumes are an essential source for researchers active in these and related fields as well as teachers preparing courses, e.g., in *Bioinorganic Chemistry*.

About the Editors

Astrid Sigel has studied languages and was an editor of the *Metal Ions in Biological Systems* series (until Volume 44) and also of the *Handbooks on Toxicity of Inorganic Compounds* (1988), on *Metals in Clinical and Analytical Chemistry* (1994; both with H. G. Seiler) and on *Metalloproteins* (2001; with Ivano Bertini).

Helmut Sigel is Emeritus Professor (2003) of Inorganic Chemistry at the University of Basel, Switzerland, and a previous editor of the *MIBS* series until Volume 44. He serves on various editorial and advisory boards, published over 300 articles on metal ion complexes of nucleotides, coenzymes, and other ligands of biological relevance, and lectured worldwide. He was named *Protagonist in Chemistry* (2002) by *ICA* (issue 339); among further honors are the *P. Ray Award* (Indian Chemical Society, of which he is also an Honorary Fellow), the *Alfred Werner Prize* (Swiss Chemical Society), a *Doctor of Science honoris causa* degree (Kalyani University, India), appointments as *Visiting Professor* (e.g., Austria, China, Japan, Kuwait, UK) and *Endowed Lectureships*.

Roland K. O. Sigel is Associate Professor (2009) of Inorganic Chemistry at the University of Zürich, Switzerland. From 2003 to 2008 he was endowed with a Förderungsprofessur of the Swiss National Science Foundation and he is a recipient of an ERC Starting Grant 2010. He received his doctoral degree *summa cum laude* (1999) from the University of Dortmund, Germany, working with Bernhard Lippert. Thereafter he spent nearly three years at Columbia University, New York, USA, with Anna Marie Pyle (now Yale University). During the six years abroad he received several prestigious fellowships from various sources, and he was awarded the *EuroBIC Medal* in 2008 and the *Alfred Werner Prize* (SCS) in 2009. His research focuses on the structural and catalytic role of metal ions in ribozymes, especially group II introns, and on related topics. He was also an editor of Volumes 43 and 44 of the *MIBS* series.

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