



Interrelations between Essential Metal Ions and Human Diseases (Metal Ions in Life Sciences)

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MILS-13 provides an up-to-date review on the relationships between essential metals and human diseases, covering 13 metals and 3 metalloids: The bulk metals sodium, potassium, magnesium, and calcium, plus the trace elements manganese, iron, cobalt, copper, zinc, molybdenum, and selenium, all of which are essential for life. Also covered are chromium, vanadium, nickel, silicon, and arsenic, which have been proposed as being essential for humans in the 2nd half of the last century. However, if at all, they are needed only in ultra-trace amounts, and because of their prevalence in the environment, it has been difficult to prove whether or not they are required. In any case, all these elements are toxic in higher concentrations and therefore, transport and cellular concentrations of at least the essential ones, are tightly controlled; hence, their homeostasis and role for life, including deficiency or overload, and their links to illnesses, including cancer and neurological disorders, are thoroughly discussed. Indeed, it is an old wisdom that metals are indispensable for life. Therefore, Volume 13 provides in an authoritative and timely manner in 16 stimulating chapters, written by 29 internationally recognized experts from 7 nations, and supported by more than 2750 references, and over 20 tables and 80 illustrations, many in color, a most up-to-date view on the vibrant research area of the Interrelations between Essential Metal Ions and Human Diseases.

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Editorial Review

Review

From the book reviews:

“This volume, which lies at the natural juncture between chemistry, biology, physiology, biochemistry, pharmacology and medicine, provides the basis for understanding the important roles played by metal ions and the clinical consequences of an imbalance in their homeostasis. I have no doubt that this volume will serve not only as a source of inspiration as well as an important reference point for academics working in this research field, but will also act as an invaluable resource for undergraduate teaching.” (Celine J. Marmion, *Transition Metal Chemistry*, Vol. 39, 2014)

“The book is a great compilation of high-quality review articles describing how essential metals and metalloids correlate with human diseases. Its interdisciplinary line-up ensures that every reader will learn something new when browsing through the book. Each of its chapters is well suited to serve both as a reference for scientists already familiar with the respective subject and as a starting point for novices. ... deserves a place in every scientific library and on the shelf of every bioinorganic chemist.” (Jens Müller, *Inorganica Chimica Acta*, Vol. 423, 2014)

From the Back Cover

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Astrid Sigel, Helmut Sigel, and Roland K. O. Sigel have long-standing interests in *Biological Inorganic Chemistry*. Their research focuses on metal ion interactions with nucleotides and nucleic acids and on related topics. They edited previously 44 volumes in the series *Metal Ions in Biological Systems*.

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