

Inorganic Polyphosphates

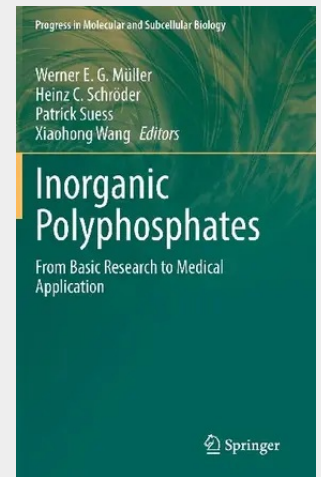
From Basic Research to Medical Application

This volume focuses on the biomedical aspects of inorganic polyphosphates, a family of unique bio-inorganic polymers.

In recent years, great advances have been made in understanding the development, metabolism, and physiological role of inorganic polyphosphates. These energy-rich polymers, which consist of long chains of phosphate units, are evolutionary old molecules. The acidocalcisomes, conserved organelles from bacteria to humans, as well as the mitochondria play a central role in polyphosphate production and storage. Polyphosphates have been assigned multiple functions, some of which are closely related to medically important processes, such as blood coagulation and fibrinolysis, energy metabolism, cell cycle regulation, apoptosis, chaperon function, microvascularization, stress response, neurodegeneration and aging. The development of bioinspired polyphosphate particles, in combination with suitable hydrogel-forming polymers enabled the development of new strategies in regenerative medicine, in particular for hard and soft tissue repair, but also in drug delivery and antimicrobial defense.

This book not only highlights the basic research in this area, but also discusses possible applications. Therefore, it appeals to scientists working in cell biology, biochemistry, and biomedicine and practitioners alike.

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