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Zinc homeostasis at the bacteria/host interface : from coordination chemistry to nutritional immunity.

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Streszczenie

Zinc is one of the most important metal nutrients for species from all kingdoms, being a key structural or catalytic component of hundreds of enzymes, crucial for the survival of both pathogenic microorganisms and their hosts. This work is an overview of the homeostasis of zinc in bacteria and humans. It explains the importance of this metal nutrient for pathogens, describes the roles of zinc sensors, regulators, and transporters, and summarizes various uptake systems and different proteins involved in zinc homeostasis—both those used for storage, buffering, and signaling inside the cell and those excreted in order to obtain Zn^{II} from the host. The human zinc-dependent immune system response is explained, with a special focus given to ‘zinc nutritional immunity′, a process that describes the competition between the bacteria or fungus and the host for this metal, during which both the pathogen and host make huge efforts to control zinc availability. This sophisticated tug of war over Zn^{II} might be considered as a possible target for novel antibacterial therapies.

Słowa kluczowe

bacterial zinc homeostasis, human zinc homeostasis, nutritional immunity, zinc, zincophores

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