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Nota di contenuto	Iron Metabolism; Contents; Preface; 1. Solution Chemistry of Iron in Biological Media; 1.1 Aqueous Solution Chemistry of Iron; 1.1.1 Oxygen Free Radicals; 1.1.2 Iron Hydrolysis - a Ubiquitous Phenomenon; 1.1.3 Hydrolysis of Iron(III) in Acid Media - Formation of Polynuclear Species; 1.1.4 Ageing of Amorphous Ferrihydrite to more Crystalline Products; 1.2 Biomineralisation; 1.2.1 Magnetite Biomineralisation by Magnetotactic Bacteria; References; 2. The Importance of Iron for Biological Systems; 2.1 Introduction; 2.2 Physical Techniques for the Study of Iron in Biological Systems 2.3 Haemoproteins 2.3.1 Oxygen Carriers; 2.3.2 Activators of Molecular Oxygen; 2.3.3 Electron Transport Proteins; 2.4 Iron-Sulfur Proteins; 2.5 Other Iron Containing Proteins; 2.5.1 Mononuclear Non-Haem Iron Enzymes; 2.5.2 Dinuclear Non-Haem Iron Enzymes; References; 3. Microbial Iron Transport and Metabolism; 3.1 Introduction; 3.2 Siderophores; 3.2.1 Iron Transport Across the Outer Membrane in Gram-Negative Bacteria; 3.2.2 Transport Across the Periplasm and Cytoplasmic Membrane; 3.2.3 Iron Release from Ferric Siderophores

and Ferric Reduction; 3.2.4 Fe<sup>2+</sup> Transport Systems in *E. coli*  
 3.2.5 Fe<sup>3+</sup> Iron Acquisition by Pathogens  
 3.3 Intracellular Iron Metabolism; 3.4 Control of Gene Expression by Iron; References; 4. Iron Uptake by Plants and Fungi; 4.1 Iron Acquisition by Plants; 4.1.1 Introduction; 4.1.2 Iron Acquisition by the Roots of Plants; 4.1.3 Long Distance Iron Transport; 4.1.4 Intracellular Iron Transport; 4.2 Iron Acquisition by Yeast; 4.2.1 Introduction - Pathways for Iron Uptake; 4.2.2 Cell Surface Reductases; 4.2.3 High Affinity Iron Transport System; 4.2.4 Low Affinity Ferrous Iron Transport; 4.2.5 Siderophore-Mediated Iron Uptake  
 4.2.6 Intracellular Iron Metabolism  
 4.2.7 Iron Transport in Other Fungi; 4.2.8 Regulation of Iron Uptake/Homeostasis in Yeast; References; 5. Cellular Iron Uptake and Export in Mammals; 5.1 The Transferrins; 5.2 Structure of Transferrins; 5.3 Transferrin Iron Binding and Release; 5.4 Iron Uptake by Mammalian Cells - Uptake of Transferrin Bound Iron; 5.4.1 The Transferrin Receptor; 5.4.2 The Transferrin-to-Cell Cycle; 5.4.3 Transferrin Binding to its Receptor; 5.5 Cellular Iron Uptake and Export; 5.5.1 Red Blood Cell Precursors; 5.5.2 Tissue Macrophages; 5.5.3 Hepatocytes  
 5.6 Uptake of Iron from Other Sources than Transferrin  
 5.7 Nontransferrin Bound Iron; 5.8 Ferritin Bound Iron; 5.9 Haptoglobin and Haemopexin as Iron Transporters; References; 6. Intracellular Iron Storage and Biomineralisation; 6.1 Intracellular Iron Storage; 6.1.1 Ferritin: Distribution and Primary Structure; 6.1.2 Three-Dimensional Structure; 6.1.3 The Mineral Core; 6.1.4 Iron Deposition in Ferritin; 6.1.5 Iron Mobilisation from Ferritin; 6.1.6 Haemosiderin; 6.2 Biomineralisation; References; 7. Intracellular Iron Metabolism and Cellular Iron Homeostasis; 7.1 Intracellular Iron Metabolism  
 7.1.1 The Labile Iron Pool

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Sommario/riassunto

Iron is of fundamental importance to the growth, development and well-being of almost all living organisms. Multiple biological systems have evolved for the uptake, utilisation, storage, and homeostasis of iron in microbes, plants and mammals. Both iron deficiency and iron overload are found extensively in humans; the intimate links between iron and oxidative stress are associated with a wide range of pathologies. Iron has a well established role in infections by a range of microorganisms and parasites. Other metals such as copper and zinc are also closely linked with iron metabolism. Iron ove

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