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Autore	Katja M. Kanninen
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Sommario/riassunto

Biometals such as copper, zinc and iron have key biological functions, however, aberrant metabolism can lead to detrimental effects on cell function and survival. These biometals have important roles in the brain, driving cellular respiration, antioxidant activity, intracellular signaling and many additional structural and enzymatic functions. There is now considerable evidence that abnormal biometal homeostasis is a key feature of many neurodegenerative diseases and may have an important role in the onset and progression of disorders such as Alzheimer’s, Parkinson’s, prion and motor neuron diseases. Recent studies also support biometal roles in a number of less common neurodegenerative disorders. The role of biometals in a growing list of brain disorders is supported by evidence from a wide range of sources including molecular genetics, biochemical studies and biometal imaging. These studies have spurred a growing interest in understanding the role of biometals in brain function and disease as well as the development of therapeutic approaches that may be able to restore the altered biometal chemistry of the brain. These approaches range from genetic manipulation of biometal transport to chelation of excess metals or delivery of metals where levels are deficient. A number of these approaches are offering promising results in cellular and animal models of neurodegeneration with successful translation to pre-clinical and clinical trials. At a time of aging populations and slow progress in development of neurotherapeutics to treat age-related

neurodegenerative diseases, there is now a critical need to further our understanding of biometals in neurodegeneration. This issue covers a broad range of topics related to biometals and their role in neurodegeneration. It is hoped that this will inspire greater discussion and exchange of ideas in this crucial area of research and lead to positive outcomes for sufferers of these neurodegenerative diseases.