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AAA+ Proteins in Health and Disease: Structure, Physiological Function, and Mechanisms of Action

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Deadline for manuscript submissions:
closed (20 January 2020)

Message from the Guest Editors

Dear Colleagues,

AAA+ (ATPases associated with a variety of cellular activities) proteins belong to a large protein superfamily that are involved in a broad range of physiological activities. Many of these processes are essential to the cell and range from transcription and DNA replication, membrane fusion, and protein homeostasis through the regulated turnover of protein by AAA+ proteases. The unifying feature of these proteins is the presence of one or more AAA+ domains (which are composed of 200–250 amino acids). Each module contains a number of signature elements, most notably the Walker A and Walker B motifs required for ATP binding and hydrolysis. In general, these ATP-dependent machines convert the chemical energy, stored in ATP, into a mechanical force, to drive the remodelling or unfolding of various different macromolecular complexes. Over the past few years, there have been a number of significant developments in the field that have advanced our structural, functional, and physiological understanding of these machines. This Special Issue aims to bring together original work and reviews that highlight the most recent and significant developments in the field.

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