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Review

## The calpains

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### Abstract

In recent years interest has increased concerning the characterization of the structural-functional properties and the identification of the physiological role of nonlysosomal intracellular proteinases. Among these, calpain, a calcium-dependent cysteine proteinase ubiquitously present in a variety of tissues and cells, has been most extensively investigated in terms of activation, regulatory mechanisms, specificity and biological function. This review discusses each of these points on the basis of the most recent results concerning the general characteristics of calpain activity, and its preferential site of action within the cell as related to the specific functions of the proteinase in different cell types. As with other proteinases, calpain has to be under a continuous spatial and temporal control, and the structural and functional properties of the natural calpain inhibitor, calpastatin, must also be considered. The calpain-calpastatin system is the functional proteolytic unit that governs the activity of this intracellular proteolytic system, which is tightly correlated to the control of calcium homeostasis and thereby to the biological process of transmembrane signalling.



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