

Structural Interplay between Calcium(II) and Copper(II) Binding to S100A13

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S100 constitute an important class of EF hand calcium-binding proteins involved in various human diseases, through a variety of networks of interacting proteins. S100 are also capable to bind copper and zinc ions, which are thought to fine-modulate their interactions. S100A13, a member of this class of proteins, is involved in the copper-dependent cellular export of interleukin-1 α and fibroblast growth factor-1, two potent pro-inflammatory factors. The NMR structure of S100A13 in the apo and calcium(II)-bound states reveals key conformational changes, which include helix reorientation and surface accessibility changes, leading to an optimal ligand arrangement, at the interface between two monomers, for the creation of two symmetrical type II copper(II)-binding sites, which are characterized through EPR and NMR spectroscopy.