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Effect of Removing Hub Domain on Human CaMKII Isoforms Sensitivity to Calcium/Calmodulin

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Abstract : CaMKII (calcium-calmodulin dependent protein kinase II) makes up 2% of the protein in our brain and has a critical role in memory formation and long-term potentiation of neurons. Despite this, research has yet to uncover the role of one of the domains on the activation of this kinase. The following proposes to express the protein without the hub domain in E. coli, leaving only the kinase and regulatory segment of the protein. Next, a series of kinase assays will be conducted to elucidate the role the hub domain plays on CaMKII sensitivity to calcium/calmodulin activation. The hub domain may be important for activation; however, it may also be a variety of domains working together to influence protein activation and not the hub alone. Characterization of a protein is critical to the future understanding of the protein's function, as well as for producing pharmacological targets in cases of patients with diseases.

Keywords : CaMKII, hub domain, kinase assays, kinase + reg seg
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