

CAMKI gamma/CAMK1G Protein, Human, Recombinant (His & GST)

General Information

Synonyms:	VWS1;RP1-272L16.2;calcium/calmodulin-dependent protein kinase IG;CLICKIII;CLICK3; dJ272L16.1;CaMKI γ /CAMK1G
Protein Construction:	A DNA sequence encoding the human CAMK1G isoform 1 (Q96NX5-1) (Met 1-Met 476) was fused with the N-terminal polyhistidine-tagged GST tag at the N-terminus. Predicted N terminal: Met
Species:	Human
Expression Host:	Baculovirus Insect Cells
Accession:	Q96NX5-1
Molecular Weight:	81 kDa (predicted); 75 kDa (reducing conditions)

QC Testing

Biological Activity:	No Kinase Activity
Purity:	> 85 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/ μ g of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μ m filter, containing 50 mM Tris, 100 mM NaCl, pH 8.0, 20% gly, 0.3 mM DTT. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Calmodulin-Dependent Protein Kinase (CaM Kinase) is a kind of protein phosphorylate multiple downstream targets. Concentration of cytosolic calcium functions as a second messenger that mediates a wide range of cellular responses. Calcium binds to calcium binding proteins (calmodulin/CaM) and stimulates the activity of a variety of enzymes, including CaM kinases referred to as CaM-kinases (CaMKs), such as CaMKI, CaMKII, CaMKIV and

CaMKK. Calmodulin-dependent protein kinase CL3/CaMKI γ is a membrane-anchored CaMK belonging to the CaM kinase family. Its C-terminal region is uniquely modified by two sequential lipidification steps: prenylation followed by a kinase-activity-regulated palmitoylation. These modifications are essential for CaMKI γ membrane anchoring and targeting into detergent-resistant lipid microdomains in the dendrites. It has been found that CaMKI γ critically contributed to BDNF-stimulated dendritic growth. Raft insertion of CaMKI γ specifically promoted dendritogenesis of cortical neurons by acting upstream of RacGEF STEF and Rac, both present in lipid rafts. Thus, CaMKI γ may represent a key element in the Ca²⁺-dependent and lipid-raft-delineated switch that turns on extrinsic activity-regulated dendrite formation in developing cortical neurons.

Reference

Davare MA, et al. (2009) Transient receptor potential canonical 5 channels activate Ca²⁺/ calmodulin kinase I γ to promote axon formation in hippocampal neurons. *J Neurosci*. 29 (31): 9794-808.

Takemoto-Kimura S, et al. (2007) Regulation of dendritogenesis via a lipid-raft-associated Ca²⁺/ calmodulin - dependent protein kinase CLICK-III / CaMKI γ . *Neuron*. 54 (5): 755-70.

HArrill JA, et al. (2010) Splice variant specific increase in Ca²⁺/ calmodulin-dependent protein kinase 1- γ mRNA expression in response to acute pyrethroid exposure. *J Biochem Mol Toxicol*. 24 (3): 174-86.

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