



GCN2 (h): 293T Lysate: sc-128701

BACKGROUND

The family of stress-responsive protein kinases include HRI (heme-regulated inhibitor or EIF2AK1), PKR (EIF2AK2 or TIK), PERK (EIF2AK3) and GCN2 (EIF2AK4). These proteins phosphorylate the eukaryotic translation initiation factor 2 α (eIF2 α) on Ser 51 to regulate general and gene-specific protein synthesis. Phosphorylated eIF2 α acts as an inhibitor of its guanine nucleotide exchange factor eIF2B. GCN2, a unique eIF2 α kinase, exists in all eukaryotes from yeast to mammals. In mammals, expression of GCN2 is highest in liver and brain tissues. GCN2 primarily initiates the phosphorylation of eIF2 α in response to UV, but has been shown to increase phosphorylation activity in response to serum starvation. Also, substitution of Asp 83 for Ala on eIF2 α results in impaired phosphorylation by GCN2 and PKR, suggesting a contribution of remote residues to kinase-substrate recognition.

REFERENCES

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2. Jiang, H.Y., et al. 2003. Phosphorylation of the α subunit of eukaryotic initiation factor 2 is required for activation of NF κ B in response to diverse cellular stresses. *Mol. Cell. Biol.* 23: 5651-5663.
3. Anthony, T.G., et al. 2004. Preservation of liver protein synthesis during dietary leucine deprivation occurs at the expense of skeletal muscle mass in mice deleted for eIF2 kinase GCN2. *J. Biol. Chem.* 279: 36553-36561.
4. Costa-Mattoli, M., et al. 2005. Translational control of hippocampal synaptic plasticity and memory by the eIF2 α kinase GCN2. *Nature* 436: 1166-1173.
5. Dey, M., et al. 2005. PKR and GCN2 kinases and guanine nucleotide exchange factor eukaryotic translation initiation factor 2B (eIF2B) recognize overlapping surfaces on eIF2 α . *Mol. Cell. Biol.* 25: 3063-3075.
6. Hamanaka, R.B., et al. 2005. PERK and GCN2 contribute to eIF2 α phosphorylation and cell cycle arrest after activation of the unfolded protein response pathway. *Mol. Biol. Cell* 16: 5493-5501.
7. Jiang, H.Y., et al. 2005. GCN2 phosphorylation of eIF2 α activates NF κ B in response to UV irradiation. *Biochem. J.* 385: 371-380.

CHROMOSOMAL LOCATION

Genetic locus: EIF2AK4 (human) mapping to 15q15.1.

PRODUCT

GCN2 (h): 293T Lysate represents a lysate of human GCN2 transfected 293T cells and is provided as 100 μ g protein in 200 μ l SDS-PAGE buffer.

APPLICATIONS

GCN2 (h): 293T Lysate is suitable as a Western Blotting positive control for human reactive GCN2 antibodies. Recommended use: 10-20 μ l per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.