SANTA CRUZ BIOTECHNOLOGY, INC.

GCN2 (C-13): sc-46338

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 2α (eIF2α) on Ser 51 to regulate general and gene-specific protein synthesis. Phosphorylated eIF2α acts as an inhibitor of its guanine nucleotide exchange factor eIF2B. GCN2, a unique eIF2α 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 eIF2α 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 eIF2α results in impaired phosphorylation by GCN2 and PKR, suggesting a contribution of remote residues to kinase-substrate recognition.

REFERENCES

1. Berlanga, J.J., et al. 1999. Characterization of a mammalian homolog of the GCN2 eukaryotic initiation factor 2α kinase. Eur. J. Biochem. 265: 754-762.
2. Jiang, H.Y., et al. 2003. Phosphorylation of the α subunit of eukaryotic initiation factor 2 is required for activation of NFκB 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-Mattioli, M., et al. 2005. Translational control of hippocampal synaptic plasticity and memory by the eIF2α kinase GCN2. Nature 436: 1166-1173.

CHROMOSOMAL LOCATION

Genetic locus: EIF2AK4 (human) mapping to 15q15.1; Eif2ak4 (mouse) mapping to 2 E5.

SOURCE

GCN2 (C-13) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of GCN2 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-46338 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

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

APPLICATIONS

GCN2 (C-13) is recommended for detection of GCN2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

GCN2 (C-13) is also recommended for detection of GCN2 in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for GCN2 siRNA (h): sc-45644, GCN2 siRNA (m): sc-45645, GCN2 shRNA Plasmid (h): sc-45644-SH, GCN2 shRNA Plasmid (m): sc-45645-SH, GCN2 shRNA (h) Lentiviral Particles: sc-45644-V and GCN2 shRNA (m) Lentiviral Particles: sc-45645-V.

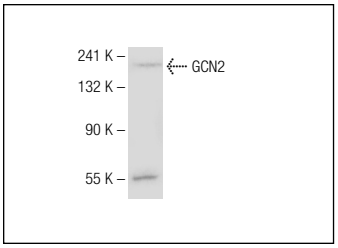
Molecular Weight of hyperphosphorylated GCN2: 150-206 kDa.

Positive Controls: NIH/3T3 whole cell lysate: sc-2210.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



GCN2 (C-13): sc-46338. Western blot analysis of GCN2 expression in NIH/3T3 whole cell lysate.

SELECT PRODUCT CITATIONS

1. Deval, C., et al. 2008. Amino-acid limitation induces the GCN2 signaling pathway in myoblasts but not in myotubes. Biochimie 90: 1716-1721.