SANTA CRUZ BIOTECHNOLOGY, INC.

GCN2 (F-7): sc-374609

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.

CHROMOSOMAL LOCATION

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

SOURCE

GCN2 (F-7) is a mouse monoclonal antibody raised against amino acids 1350-1649 mapping at the C-terminus of GCN2 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GCN2 (F-7) is available conjugated to agarose (sc-374609 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-374609 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-374609 PE), fluorescein (sc-374609 FITC), Alexa Fluor® 488 (sc-374609 AF488), Alexa Fluor® 546 (sc-374609 AF546), Alexa Fluor® 594 (sc-374609 AF594) or Alexa Fluor® 647 (sc-374609 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-374609 AF680) or Alexa Fluor® 790 (sc-374609 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

GCN2 (F-7) is recommended for detection of GCN2 of human origin by Western Blotting (starting dilution 1:100, 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

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

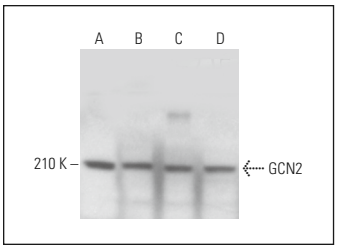
Molecular Weight of hyperphosphorylated GCN2: 150-206 kDa.

Positive Controls: IMR-32 cell lysate: sc-2409.

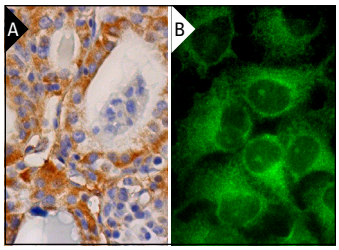
STORAGE

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

DATA



GCN2 (F-7): sc-374609. Western blot analysis of GCN2 expression in IMR-32 (**A**), F9 (**B**), c4 (**C**) and PC-12 (**D**) whole cell lysates.



GCN2 (F-7): sc-374609. Immunoperoxidase staining of formalin fixed, paraffin-embedded human thyroid gland tissue showing cytoplasmic staining of glandular cells (**A**). Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization (**B**).

SELECT PRODUCT CITATIONS

1. Matassa, D.S., et al. 2013. Translational control in the stress adaptive response of cancer cells: a novel role for the heat shock protein TRAP1. Cell Death Dis. 4: e851.
2. Cormerais, Y., et al. 2016. Genetic disruption of the multifunctional CD98/LAT1 complex demonstrates the key role of essential amino acid transport in the control of mTORC1 and tumor growth. Cancer Res. 76: 4481-4492.
3. Luo, C., et al. 2018. SESN2 negatively regulates cell proliferation and casein synthesis by inhibition the amino acid-mediated mTORC1 pathway in cow mammary epithelial cells. Sci. Rep. 8: 3912.
4. Daher, B., et al. 2019. Genetic ablation of the cystine transporter xCT in PDAC cells inhibits mTORC1, growth, survival, and tumor formation via nutrient and oxidative stresses. Cancer Res. 79: 3877-3890.
5. Kapoor, A., et al. 2020. Endorepellin evokes an angiostatic stress signaling cascade in endothelial cells. J. Biol. Chem. 295: 6344-6356.
6. Tajan, M., et al. 2021. Serine synthesis pathway inhibition cooperates with dietary serine and glycine limitation for cancer therapy. Nat. Commun. 12: 366.
7. Eleftheriadis, T., et al. 2021. The effect of anti-HLA class I antibodies on the immunological properties of human glomerular endothelial cells and their modification by mTOR inhibition or GCN2 kinase activation. Mol. Med. Rep. 23: 355.
8. Yerbes, R., et al. 2022. Limiting glutamine utilization activates a GCN2/TRAIL-R2/caspase-8 apoptotic pathway in glutamine-addicted tumor cells. Cell Death Dis. 13: 906.
9. Haakonsen, D.L., et al. 2024. Stress response silencing by an E3 ligase mutated in neurodegeneration. Nature 626: 874-880.

RESEARCH USE

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