SANTA CRUZ BIOTECHNOLOGY, INC.

eIF2α (D-3): sc-133132

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The initiation of protein synthesis in eukaryotic cells is regulated by interactions between protein initiation factors and RNA molecules. The eukaryotic initiation complex is composed of three subunits, designated eIF2α, eIF2β and eIF2γ (eukaryotic translation initiation factor 2 α, β and γ, respectively), all of which work in concert to form a ternary complex with GTP and tRNA in the early stages of protein synthesis. eIF2α, also known as EIF2S1 or EIF2, is a 315 amino acid subunit of the eukaryotic initiation complex that functions to bind tRNA to the 40S ribosomal subunit (in a GTP-dependent manner), thereby initiating translation. In addition, the phosphorylation state of eIF2α controls the rate of tRNA translation. When eIF2α is not phosphorylated, translation occurs at a normal rate. However, upon phosphorylation by one of several kinases, eIF2α is stabilized, thus preventing the GDP/GTP exchange reaction and slowing translation.

CHROMOSOMAL LOCATION

Genetic locus: EIF2S1 (human) mapping to 14q23.3; Eif2s1 (mouse) mapping to 12 C3.

SOURCE

eIF2α (D-3) is a mouse monoclonal antibody raised against acids 1-315 representing full length eIF2α 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.

eIF2α (D-3) is available conjugated to agarose (sc-133132 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-133132 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-133132 PE), fluorescein (sc-133132 FITC), Alexa Fluor® 488 (sc-133132 AF488), Alexa Fluor® 546 (sc-133132 AF546), Alexa Fluor® 594 (sc-133132 AF594) or Alexa Fluor® 647 (sc-133132 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-133132 AF680) or Alexa Fluor® 790 (sc-133132 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

eIF2α (D-3) is recommended for detection of eIF2α of mouse, rat and 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 eIF2α siRNA (h): sc-35272, eIF2α siRNA (m): sc-35273, eIF2α shRNA Plasmid (h): sc-35272-SH, eIF2α shRNA Plasmid (m): sc-35273-SH, eIF2α shRNA (h) Lentiviral Particles: sc-35272-V and eIF2α shRNA (m) Lentiviral Particles: sc-35273-V.

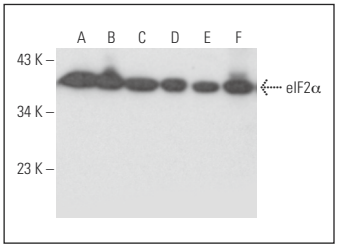
Molecular Weight of eIF2α: 36 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, Jurkat whole cell lysate: sc-2204 or A-431 whole cell lysate: sc-2201.

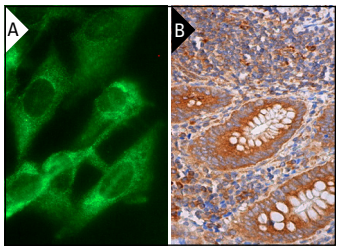
STORAGE

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

DATA



eIF2α (D-3): sc-133132. Western blot analysis of eIF2α expression in HeLa (**A**), Jurkat (**B**), PC-12 (**C**), A-431 (**D**) and NIH/3T3 (**E**) whole cell lysates and mouse placenta tissue extract (**F**).



eIF2α (D-3): sc-133132. Immunofluorescence staining of methanol-fixed NIH/3T3 cells showing cytoplasmic localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human appendix tissue showing cytoplasmic staining of glandular cells and lymphoid cells (**B**).

SELECT PRODUCT CITATIONS

1. Martin, L., et al. 2010. Regulation of the unfolded protein response by eif2Bδ isoforms. J. Biol. Chem. 285: 31944-31953.
2. Xu, S., et al. 2015. Palmitate induces ER calcium depletion and apoptosis in mouse podocytes subsequent to mitochondrial oxidative stress. Cell Death Dis. 6: e1976.
3. Li, Z.Y., et al. 2016. TGF-β and NFκB signaling pathway crosstalk potentiates corneal epithelial senescence through an RNA stress response. Aging 8: 2337-2354.
4. Maddalena, F., et al. 2017. TRAP1 protein signature predicts outcome in human metastatic colorectal carcinoma. Oncotarget 8: 21229-21240.
5. Lai, S.W., et al. 2018. Differential characterization of temozolomide-resistant human glioma cells. Int. J. Mol. Sci. 19: 127.
6. Wang, R., et al. 2019. Circadian control of stress granules by oscillating EIF2α. Cell Death Dis. 10: 215.
7. Guillén-Boixet, J., et al. 2020. RNA-induced conformational switching and clustering of G3BP drive stress granule assembly by condensation. Cell 181: 346-361.e17.
8. Kim, T.W., et al. 2021. PB01 suppresses radio-resistance by regulating ATR signaling in human non-small-cell lung cancer cells. Sci. Rep. 11: 12093.
9. Siow, W.X., et al. 2022. Lysosomal TRPML1 regulates mitochondrial function in hepatocellular carcinoma cells. J. Cell Sci. 135: jcs259455.
10. Kim, T.W. and Lee, H.G. 2023. 6-Shogaol overcomes gefitinib resistance via ER stress in ovarian cancer cells. Int. J. Mol. Sci. 24: 2639.

RESEARCH USE

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