SANTA CRUZ BIOTECHNOLOGY, INC.

p-eIF2α (Ser 52): sc-101670

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.

REFERENCES

1. Trachsel, H., et al. 1978. Binding and release of eukaryotic initiation factor eIF-2 and GTP during protein synthesis initiation. Proc. Natl. Acad. Sci. USA 75: 204-208.
2. Benne, R., et al. 1979. The activity of eukaryotic initiation factor eIF-2 in ternary complex formation with GTP and Met-tRNA. J. Biol. Chem. 254: 3201-3205.

CHROMOSOMAL LOCATION

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

SOURCE

p-eIF2α (Ser 52) is a rabbit polyclonal antibody raised against a short amino acid sequence containing phosphorylated Ser 52 of eIF2α of human origin.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

p-eIF2α (Ser 52) is recommended for detection of Ser 52 phosphorylated eIF2α 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 immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

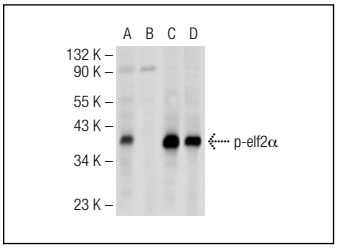
Suitable for use as control antibody for eIF2α siRNA (h): sc-35272, eIF2α siRNA (m): sc-35273, eIF2α shRNA Plasmid (h): sc-35272-SH, eIF2α shRNA Plasmid (m): sc-35273-SH, eIF2α shRNA (h) Lentiviral Particles: sc-35272-V and eIF2α shRNA (m) Lentiviral Particles: sc-35273-V.

Positive Controls: HEK293 whole cell lysate: sc-45136, HeLa whole cell lysate: sc-2200 or IFNα-treated K-562 whole cell lysate.

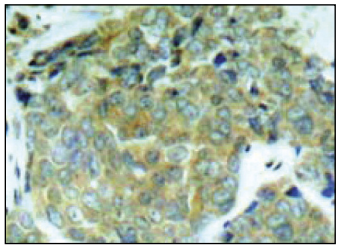
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Western Blotting Luminol Reagent: sc-2048 and Lambda Phosphatase: sc-200312A. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941. 4) Immunohistochemistry: use ImmunoCruz™: sc-2051 or ABC: sc-2018 rabbit IgG Staining Systems.

DATA



Western blot analysis of eIF2α phosphorylation in untreated (**A**, **C**) and lambda protein phosphatase (sc-200312A) treated (**B**, **D**) HEK293 whole cell lysates. Antibodies tested include p-eIF2α (Ser 52): sc-101670 (**A**, **B**) and eIF2α (EIF2S1A2B8): sc-81261 (**C**, **D**).



p-eIF2a (Ser 51): sc-101670. Immunoperoxidase staining of formalin-fixed, paraffin-embedded human breast carcinoma tissue showing cytoplasmic staining.

SELECT PRODUCT CITATIONS

1. Pfeifer, I., et al. 2008. NFAR-1 and -2 modulate translation and are required for efficient host defense. Proc. Natl. Acad. Sci. USA 105: 4173-4178.
2. Spurgeon, M.E., et al. 2009. The adenovirus E1B-55K and E4orf6 proteins limit phosphorylation of eIF2α during the late phase of infection. J. Virol. 83: 9970-9982.
3. Zhang, J., et al. 2010. Suppression of hypoxia-inducible factor 1α (HIF-1α) by tirapazamine is dependent on eIF2α phosphorylation rather than the mTORC1/4E-BP1 pathway. PLoS One 5: e13910.
4. Ni, L., et al. 2011. β-AR blockers suppresses ER stress in cardiac hypertrophy and heart failure. PLoS ONE 6: e27294.

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.

PROTOCOLS

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