SANTA CRUZ BIOTECHNOLOGY, INC.

eIF2α (m2): 293T Lysate: sc-119968

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 eIF2 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 eIF2 in ternary complex formation with GTP and Met-tRNA. J. Biol. Chem. 254: 3201-3205.
3. Ernst, H., et al. 1987. Cloning and sequencing of complementary DNAs encoding the α-subunit of translational initiation factor eIF2. Characterization of the protein and its messenger RNA. J. Biol. Chem. 262: 1206-1212.
4. Pathak, V.K., et al. 1988. Structure of the β subunit of translational initiation factor eIF2. Cell 54: 633-639.
5. Kaufman, R.J., et al. 1989. The phosphorylation state of eucaryotic initiation factor 2 alters translational efficiency of specific mRNAs. Mol. Cell. Biol. 9: 946-958.
6. Gaspar, N.J., et al. 1994. Translation initiation factor eIF2. Cloning and expression of the human cDNA encoding the γ-subunit. J. Biol. Chem. 269: 3415-3422.
7. Algire, M.A., et al. 2005. Pi release from eIF2, not GTP hydrolysis, is the step controlled by start-site selection during eukaryotic translation initiation. Mol. Cell 20: 251-262.
8. Boyce, M., et al. 2005. A selective inhibitor of eIF2α dephosphorylation protects cells from ER stress. Science 307: 935-939.
9. Suragani, R.N., et al. 2006. Expression and purification of the subunits of human translational initiation factor 2 (eIF2): phosphorylation of eIF2α and β. Protein Expr. Purif. 47: 225-233.

CHROMOSOMAL LOCATION

Genetic locus: Eif2s1 (mouse) mapping to 12 C3.

PRODUCT

eIF2α (m2): 293T Lysate represents a lysate of mouse eIF2α transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

APPLICATIONS

eIF2α (m2): 293T Lysate is suitable as a Western Blotting positive control for mouse reactive eIF2α antibodies. Recommended use: 10-20 µl 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.