

Phospho-eIF2 α (Ser51) Antibody

- Small 100 μ l
(10 Western mini-blots)
- Large 300 μ l
(30 Western mini-blots)

rev. 10/07/08

This product is for *in vitro* research use only and is not intended for use in humans or animals.
This product is not intended for use as a therapeutic or in diagnostic procedures.

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Applications	Species Cross-Reactivity*	Molecular Wt.	Source
W Endogenous	H, M, R, Mk, Dm, Sc	38 kDa	Rabbit**

Background: Phosphorylation of the α subunit of eukaryotic initiation factor 2 is a well documented mechanism of downregulating protein synthesis under a variety of stress conditions. Eukaryotic initiation factor 2 binds GTP and Met-tRNAi and transfers Met-tRNA to the 40S subunit to form the 43S preinitiation complex (1,2). For eIF2 to promote a new round of translation initiation, GDP must be exchanged for GTP, a reaction catalyzed by eIF2B (1,2). Kinases activated by viral infection (PKR), endoplasmic reticulum stress (PERK/PEK), amino acid deprivation (GCN2) and hemin deficiency (HRI) can phosphorylate the alpha subunit of eIF2 (3,4). This phosphorylation stabilizes the eIF2-GDP-eIF2B complex, inhibiting the turnover of eIF2B. Induction of PKR by IFN- γ and TNF- α , or stress provoked by depletion of endoplasmic reticulum calcium levels, induces potent phosphorylation of eIF2 α at Ser51 (5,6).

Specificity/Sensitivity: Phospho-eIF2 α (Ser51) Antibody detects endogenous eIF2 α only when phosphorylated at Ser51. The antibody does not recognize eIF2 α phosphorylated at other sites.

Source/Purification: Polyclonal antibodies are produced by immunizing rabbits with a synthetic phospho-peptide (KLH-coupled) corresponding to residues surrounding Ser51 of human eIF2 α . Antibodies are purified by protein A and peptide affinity chromatography.

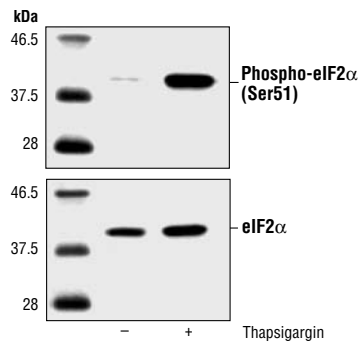
Selected Application References:

Williams, D.D. et al. (2000) Characterization of the initiation factor eIF2B and its regulation in *Drosophila melanogaster*. *J. Biol. Chem.* 276, 3733–3742. Application: W.

Koumenis, C. et al. (2002) Regulation of protein synthesis by hypoxia via activation of the endoplasmic reticulum kinase PERK and phosphorylation of the translation initiation factor eIF2 α . *Mol Cell Biol.* 22, 7405–7416. Application: W.

Li, W. et al. (2004) Mutations linked to leukoencephalopathy with vanishing white matter impair the function of the eukaryotic initiation factor 2B complex in diverse ways. *Mol. Cell. Biol.* 24, 3295–3306. Application: W.

Connor, J.H. et al. (2001) Growth arrest and DNA damage-inducible protein GADD34 assembles a novel signaling complex containing protein phosphatase 1 and inhibitor 1. *Mol. Cell. Biol.* 21, 6841–6850. Application: W.



Western blot analysis of extracts from PC12 cells, untreated or thapsigargin-treated (300 nM), using Phospho-eIF2 α (Ser51) Antibody (upper) or eIF2 α Antibody #9722 (lower).

Background References:

- (1) Kimball, S.R. (1999) *Int. J. Biochem. Cell Biol.* 31, 25–29.
- (2) De Haro, C. et al. (1996) *FASEB J.* 10, 1378–1387.
- (3) Kaufman, R.J. (1999) *Genes Dev.* 13, 1211–1233.
- (4) Sheikh, M.S. and Fornace Jr., A.J. (1999) *Oncogene* 18, 6121–6128.
- (5) Cheshire, J.L. et al. (1999) *J. Biol. Chem.* 274, 4801–4806.
- (6) Zamanian-Daryoush, M. et al. (2000) *Mol. Cell. Biol.* 20, 1278–1290.

Entrez-Gene ID #1965

Swiss-Prot Acc. #P05198

Storage: Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 μ g/ml BSA and 50% glycerol. Store at -20°C. Do not aliquot the antibody.

*Species cross-reactivity is determined by Western blot.

**Anti-rabbit secondary antibodies must be used to detect this antibody.

Recommended Antibody Dilutions:

Western blotting 1:1000

For application specific protocols please see the web page for this product at www.cellsignal.com.

Companion Products:

Phospho-eIF2 α (Ser51) (119A11) Rabbit mAb #3597

eIF2 α Antibody #9722

eIF2B-e Antibody #3595

GCN2 Antibody #3302

Phospho-PKR (Thr451) Antibody #3075

Phospho-PERK (Thr980) Antibody #3191

Phototope®-HRP Western Blot Detection System, Anti-rabbit IgG, HRP-linked Antibody #7071

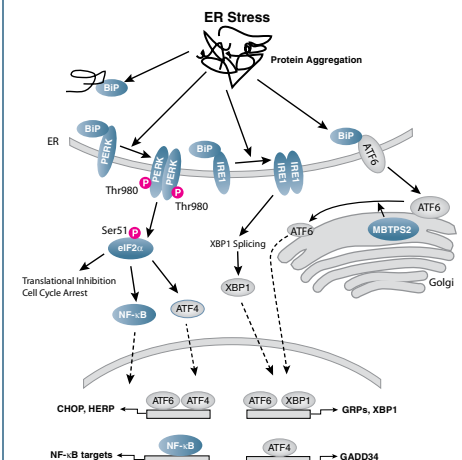
Anti-rabbit IgG, HRP-linked Antibody #7074

Prestained Protein Marker, Broad Range (Premixed Format) #7720

Biotinylated Protein Ladder Detection Pack #7727

20X LumiGLO® Reagent and 20X Peroxide #7003

Please visit www.cellsignal.com for a complete listing of recommended companion products.



IMPORTANT: For Western blots, incubate membrane with diluted antibody in 5% w/v BSA, 1X TBS, 0.1% Tween-20 at 4°C with gentle shaking, overnight.

Applications Key: W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E—ELISA E-P—ELISA Peptide

Species Cross-Reactivity Key: H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken Dm—D. melanogaster X—Xenopus Z—zebra fish B—bovine

Dg—dog Pg—pig Sc—S. cerevisiae All—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.