

# p-GSK-3 $\alpha$ (E-2): sc-365483

## BACKGROUND

Glycogen synthase kinase-3 $\alpha$  (GSK-3 $\alpha$ ) and GSK-3 $\beta$  are highly similar isoforms of serine/threonine kinases that regulate metabolic enzymes and transcription factors, which are responsible for coordinating processes such as glycogen synthesis and cell adhesion. GSK-3 $\beta$  activity is also required for nuclear activity of Rel dimers, which mediate an anti-apoptotic response to TNF $\alpha$  in mice. GSK-3 catalytic kinase activity is controlled through differential phosphorylation of serine/threonine residues, which have an inhibitory effect, and tyrosine residues, which have an activating effect. Growth factor stimulation of mammalian cells expressing GSK-3 $\alpha$  and GSK-3 $\beta$  induces phosphorylation of Ser 21 and Ser 9, respectively, through a phosphatidylinositol 3-kinase (PI 3-K)-protein kinase B (PKB)-dependent pathway, thereby enhancing proliferative signals. Additionally, GSK-3 physically associates with cAMP-dependent protein kinase A (PKA), which phosphorylates Ser 21 of GSK-3 $\alpha$  or Ser 9 of GSK-3 $\beta$  and inactivates both forms. GSK-3 $\alpha$ / $\beta$  is positively regulated by phosphorylation on Tyr 279 and Tyr 216, respectively. Activated GSK-3 $\alpha$ / $\beta$  participates in energy metabolism, neuronal cell development, and body pattern formation. Tyrosine dephosphorylation of GSK-3 is involved in its extracellular signal-dependent inactivation.

## REFERENCES

1. Plyte, S.E., et al. 1992. Glycogen synthase kinase-3: functions in oncogenesis and development. *Biochim. Biophys. Acta* 1114: 147-162.
2. Stambolic, V. and Woodgett, J.R. 1994. Mitogen inactivation of glycogen synthase kinase-3 $\beta$  in intact cells via Serine 9 phosphorylation. *Biochem. J.* 303: 701-704.
3. Wang, Q.M., et al. 1994. Glycogen synthase kinase-3 $\beta$  is a dual specificity kinase differentially regulated by tyrosine and serine/threonine phosphorylation. *J. Biol. Chem.* 269: 14566-14574.
4. Murai, H., et al. 1996. Tyrosine dephosphorylation of glycogen synthase kinase-3 is involved in its extracellular signal-dependent inactivation. *FEBS Lett.* 392: 153-160.

## CHROMOSOMAL LOCATION

Genetic locus: GSK3A (human) mapping to 19q13.2; Gsk3a (mouse) mapping to 7 A3.

## SOURCE

p-GSK-3 $\alpha$  (E-2) is a mouse monoclonal antibody epitope corresponding to a short amino acid sequence containing Ser 21 phosphorylated GSK-3 $\alpha$  of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgM kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-365483 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

p-GSK-3 $\alpha$  (E-2) is recommended for detection of Ser 21 phosphorylated GSK-3 $\alpha$  of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (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 GSK-3 $\alpha$  siRNA (h): sc-29339, GSK-3 $\alpha$  siRNA (m): sc-35526, GSK-3 $\alpha$  shRNA Plasmid (h): sc-29339-SH, GSK-3 $\alpha$  shRNA Plasmid (m): sc-35526-SH, GSK-3 $\alpha$  shRNA (h) Lentiviral Particles: sc-29339-V and GSK-3 $\alpha$  shRNA (m) Lentiviral Particles: sc-35526-V.

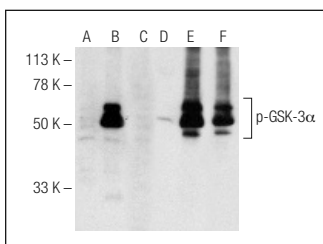
Molecular Weight of p-GSK-3 $\alpha$ : 51 kDa.

Positive Controls: GSK-3 $\alpha$  (h): 293T Lysate: sc-114699, HeLa whole cell lysate: sc-2200 or Jurkat whole cell lysate: sc-2204.

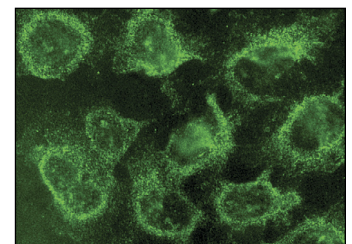
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Lambda Phosphatase: sc-200312A and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein L-Agarose: sc-2336 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



Western blot analysis of GSK-3 $\alpha$  phosphorylation in non-transfected: sc-117752 (A,D), untreated human GSK-3 $\alpha$  transfected: sc-114699 (B,E) and lambda protein phosphatase (sc-200312A) treated human GSK-3 $\alpha$  transfected: sc-114699 (C,F) 293T whole cell lysates. Antibodies tested include p-GSK-3 $\alpha$  (E-2): sc-365483 (A,B,C) and GSK-3 $\alpha$  (H-75): sc-7879 (D,E,F).



p-GSK-3 $\alpha$  (E-2): sc-365483. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

## 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.