

# p-GSK-3 $\alpha$ / $\beta$ (Tyr 279/Tyr 216): sc-11758

## 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.

## CHROMOSOMAL LOCATION

Genetic locus: GSK3A (human) mapping to 19q13.2, GSK3B (human) mapping to 3q13.33; Gsk3a (mouse) mapping to 7 A3, Gsk3b (mouse) mapping to 16 B3.

## SOURCE

p-GSK-3 $\alpha$ / $\beta$  (Tyr 279/Tyr 216) is available as either goat (sc-11758) or rabbit (sc-11758-R) polyclonal affinity purified antibody raised against a short amino acid sequence containing Tyr 216 phosphorylated GSK-3 $\beta$  of human origin.

## PRODUCT

Each vial contains 100  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-11758 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

p-GSK-3 $\alpha$ / $\beta$  (Tyr 279/Tyr 216) is recommended for detection of Tyr 279 phosphorylated GSK-3 $\alpha$  and Tyr 216 phosphorylated GSK-3 $\beta$  of mouse, rat, human, *Drosophila melanogaster*, *Xenopus laevis* and zebrafish origin by Western Blotting (starting dilution 1:200, 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), 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). p-GSK-3 $\alpha$ / $\beta$  (Tyr 279/Tyr 216) is also recommended for detection of correspondingly phosphorylated GSK-3 $\alpha$  and GSK-3 $\beta$  in additional species, including equine, canine, bovine, porcine and avian.

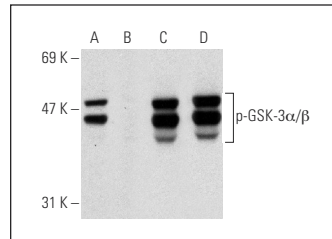
Molecular Weight of p-GSK-3 $\alpha$ : 51 kDa.

Molecular Weight of p-GSK-3 $\beta$ : 47 kDa.

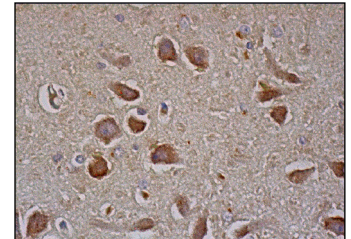
## STORAGE

Store at 4 $^{\circ}$  C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## DATA



Western blot analysis of GSK-3 $\alpha$ / $\beta$  phosphorylation in untreated (A, C) and lambda protein phosphatase (sc-200312A) treated (B, D) Hs68 whole cell lysates. Antibodies tested include p-GSK-3 $\alpha$ / $\beta$  (Tyr 279/Tyr 216)-R: sc-11758-R (A, B) and GSK-3 $\alpha$ / $\beta$  (5J105): sc-71190 (C, D).



p-GSK-3 $\alpha$ / $\beta$  (Tyr 279/ Tyr 216)-R: sc-11758-R. Immunoperoxidase staining of formalin fixed, paraffin-embedded human hippocampus tissue showing cytoplasmic staining of neuronal cells and glial cells.

## SELECT PRODUCT CITATIONS

- Jordà, E.G., et al. 2005. Implication of cyclin-dependent kinase 5 in the neuroprotective properties of lithium. *Neuroscience* 134: 1001-1011.
- Caron, D., et al. 2008. Protein tyrosine phosphatase inhibition induces anti-tumor activity: evidence of Cdk2/p27 kip1 and Cdk2/SHP-1 complex formation in human ovarian cancer cells. *Cancer Lett.* 262: 265-275.
- Lin, C.F., et al. 2008. IFN- $\gamma$  synergizes with LPS to induce nitric oxide biosynthesis through glycogen synthase kinase-3-inhibited IL-10. *J. Cell. Biochem.* 105: 746-755.
- Ding, Y., et al. 2008. Retinoic acid attenuates  $\beta$ -Amyloid deposition and rescues memory deficits in an Alzheimer's disease transgenic mouse model. *J. Neurosci.* 28: 11622-11634.
- Umar, S., et al. 2009. Functional cross-talk between  $\beta$ -catenin and NF $\kappa$ B signaling pathways in colonic crypts of mice in response to progastrin. *J. Biol. Chem.* 284: 22274-22284.
- Huang, W.C., et al. 2009. Glycogen synthase kinase-3 $\beta$  mediates endoplasmic reticulum stress-induced lysosomal apoptosis in leukemia. *J. Pharmacol. Exp. Ther.* 329: 524-531.

## RESEARCH USE

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


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Try **p-GSK-3 $\alpha$ / $\beta$  (6D3): sc-81496**, our highly recommended monoclonal alternative to p-GSK-3 $\alpha$ / $\beta$  (Tyr 279/ Tyr 216).