SANTA CRUZ BIOTECHNOLOGY, INC.

GSK-3α/β (0011-A): sc-7291

BACKGROUND

Glycogen synthase kinase 3, or GSK-3, is a serine/threonine, proline-directed kinase involved in a diverse array of signaling pathways, including glycogen synthesis and cellular adhesion, and has been implicated in Alzheimer's disease. Two forms of GSK-3, designated GSK-3α and GSK-3β, have been identified and differ in their subcellular localization. Tau, a microtubule-binding protein which serves to stabilize microtubules in growing axons, is found to be hyper-phosphorylated in paired helical filaments (PHF), the major fibrous component of neurofibrillary lesions associated with Alzheimer's disease. Hyperphosphorylation of Tau is thought to be the critical event leading to the assembly of PHF. Six Tau protein isoforms have been identified, all of which are phosphorylated by GSK-3. This presents the possibility that miscues in GSK-3 signaling contribute to the onset of Alzheimer's disease.

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

GSK-3α/β (0011-A) is a mouse monoclonal antibody raised against amino acids 1-420 representing full length glycogen synthase kinase-3β of *Xenopus* origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GSK-3α/β (0011-A) is available conjugated to agarose (sc-7291 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-7291 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-7291 PE), fluorescein (sc-7291 FITC), Alexa Fluor® 488 (sc-7291 AF488), Alexa Fluor® 546 (sc-7291 AF546), Alexa Fluor® 594 (sc-7291 AF594) or Alexa Fluor® 647 (sc-7291 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-7291 AF680) or Alexa Fluor® 790 (sc-7291 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

GSK-3α/β (0011-A) is recommended for detection of GSK-3α and GSK-3β of mouse, rat, human, canine and *Xenopus* 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 µg per 1 x 10^6 cells).

Molecular Weight of GSK-3α: 51 kDa.

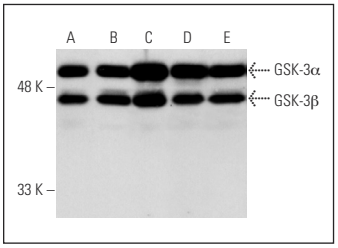
Molecular Weight of GSK-3β: 47 kDa.

Positive Controls: MDCK cell lysate: sc-2252, HeLa whole cell lysate: sc-2200 or A549 cell lysate: sc-2413.

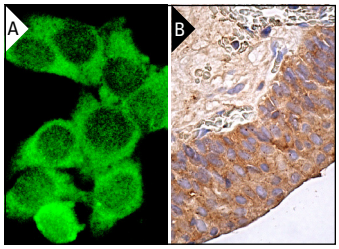
STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA



GSK-3α/β (0011-A): sc-7291. Western blot analysis of GSK-3 expression in MDCK (**A**), HeLa (**B**), A549 (**C**), SK-BR-3 (**D**) and Jurkat (**E**) whole cell lysates.



GSK-3α/β (0011-A): sc-7291. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human urinary bladder tissue showing cytoplasmic staining of urothelial cells (**B**).

SELECT PRODUCT CITATIONS

1. Graef, I.A., et al. 1999. L-type calcium channels and GSK-3 regulate the activity of NF-ATc4 in hippocampal neurons. Nature 401: 703-708.
2. Durmaz, I., et al. 2016. Liver cancer cells are sensitive to Lanatoside C induced cell death independent of their PTEN status. Phytomedicine 23: 42-51.
3. Liu, Y.Y., et al. 2017. PI3K/AKT signaling pathway activation in a rat model of migraine. Mol. Med. Rep. 16: 4849-4854.
4. Hsu, P.H., et al. 2018. Focused ultrasound-induced blood-brain barrier opening enhances GSK-3 inhibitor delivery for Amyloid-β plaque reduction. Sci. Rep. 8: 12882.
5. Obianom, O.N., et al. 2019. Triazole-based inhibitors of the Wnt/β-catenin signaling pathway improve glucose and lipid metabolism in diet-induced obese mice. J. Med. Chem. 62: 727-741.
6. López-Soldado, I., et al. 2020. Maintenance of liver glycogen during long-term fasting preserves energy state in mice. FEBS Lett. 594: 1698-1710.
7. Soltanian, B., et al. 2021. Alteration of gene expression in reactive astrocytes induced by Aβ1-42 using low dose of methamphetamine. Mol. Biol. Rep. 48: 6103-6112.
8. Gayatri, M.B., et al. 2022. High glutamine suppresses osteogenesis through mTORC1-mediated inhibition of the mTORC2/AKT-473/RUNX2 axis. Cell Death Discov. 8: 277.
9. Zhu, S., et al. 2023. HOXB3 drives WNT-activation associated progression in castration-resistant prostate cancer. Cell Death Dis. 14: 215.
10. Zelikson, N., et al. 2024. Wnt signaling regulates chemokine production and cell migration of circulating human monocytes. Cell Commun. Signal. 22: 229.

RESEARCH USE

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