SANTA CRUZ BIOTECHNOLOGY, INC.

3PGDH (6B2): sc-100317

BACKGROUND

The survival and development of central neurons require the supply of trophic factors by glial cells. The trophic actions of glial cells on Purkinje neurons are mediated by L-serine and glycine, which are glia-derived trophic factors synthesized by 3PGDH. 3PGDH protein is 544 amino acids in length. Two distinct mRNA transcripts that encode for 3PGDH protein in normal human tissues are dominant 2.1 kb mRNA, which is highly expressed in prostate, testis, ovary, brain, liver, kidney and pancreas, and weakly expressed in thymus, colon and heart, and 710 bp mRNA, which is highly expressed in heart and skeletal muscle. 3PGDH is regulated at the transcriptional level depending on tissue specificity and cellular proliferative status. 3PGDH protein is also highly expressed in adult and fetal brain tissues. 3PGDH protein plays an important role in the metabolism, development and function of the central nervous system and its deficiency is a treatable congential error that impairs L-serine biosynthesis which is characterized by congenital microcephaly, psychomotor retardation and seizures.

REFERENCES

1. de Koning, T.J., et al. 1998. Beneficial effects of L-serine and glycine in the management of seizures in 3-phosphoglycerate dehydrogenase deficiency. Ann. Neurol. 44: 261-265.
2. Shigeki, F., et al. 2000. L-serine and glycine serve as major astroglia-derived trophic factors for cerebellar Purkinje neurons. Proc. Natl. Acad. Sci. USA 97: 11528-11533.

CHROMOSOMAL LOCATION

Genetic locus: PHGDH (human) mapping to 1p12.

SOURCE

3PGDH (6B2) is a mouse monoclonal antibody raised against recombinant 3PGDH of human origin.

PRODUCT

Each vial contains 100 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

3PGDH (6B2) is recommended for detection of 3PGDH of human 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 solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for 3PGDH siRNA (h): sc-105011, 3PGDH shRNA Plasmid (h): sc-105011-SH and 3PGDH shRNA (h) Lentiviral Particles: sc-105011-V.

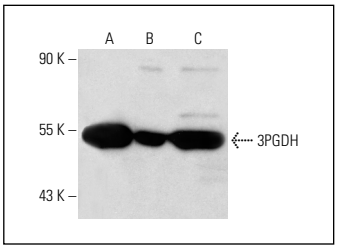
Molecular Weight of 3PGDH: 57 kDa.

Positive Controls: Jurkat whole cell ysate: sc-2204, 3PGDH (h): 293 Lysate: sc-110989 or MOLT-4 cell lysate: sc-2233.

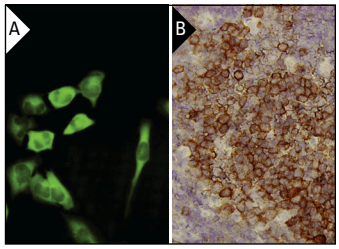
STORAGE

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

DATA



3PGDH (6B2): sc-100317. Western blot analysis of 3PGDH expression in human 3PGDH transfected 293: sc-110989 (**A**), non-transfected 293: sc-110760 (**B**) and MOLT-4 (**C**) whole cell lysates.



3PGDH (6B2): sc-100317. Immunofluorescence staining of paraformaldehyde-fixed HeLa cells showing cytoplasmic localization (**A**). Immunoperoxidase staining of formalin-fixed, paraffin-embedded human prostate tissue showing membrane and cytoplasmic localization (**B**).

SELECT PRODUCT CITATIONS

1. Locasale, J.W., et al. 2011. Phosphoglycerate dehydrogenase diverts glycolytic flux and contributes to oncogenesis. Nat. Genet. 43: 869-874.
2. Jing, Z., et al. 2013. Expression and clinical significance of phosphoglycerate dehydrogenase and squamous cell carcinoma antigen in cervical cancer. Int. J. Gynecol. Cancer 23: 1465-1469.
3. Abazyan, S., et al. 2014. Mutant disrupted-in-schizophrenia 1 in astrocytes: focus on glutamate metabolism. J. Neurosci. Res. 92: 1659-1668.
4. Wang, Z.Q., et al. 2015. BCAT1 expression associates with ovarian cancer progression: possible implications in altered disease metabolism. Oncotarget 6: 31522-31543.
5. Devadas, K., et al. 2016. Analysis of host gene expression profile in HIV-1 and HIV-2 infected T-Cells. PLoS ONE 11: e0147421.
6. Liu, K.I., et al. 2016. A chemical-inducible CRISPR-Cas9 system for rapid control of genome editing. Nat. Chem. Biol. 12: 980-987.
7. Samson, A.L., et al. 2016. Physicochemical properties that control protein aggregation also determine whether a protein is retained or released from necrotic cells. Open Biol. 6: 160098.
8. Svoboda, L.K., et al. 2018. Menin regulates the serine biosynthetic pathway in Ewing sarcoma. J. Pathol. 245: 324-336.
9. di Masi, A., et al. 2019. Metabolic profile of human parathyroid adenoma. Endocrine 67: 699-707.
10. Wang, C., et al. 2020. Acetylation stabilizes phosphoglycerate dehydrogenase by disrupting the interaction of E3 ligase RNF5 to promote breast tumorigenesis. Cell Rep. 32: 108021.

RESEARCH USE

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