SANTA CRUZ BIOTECHNOLOGY, INC.

HIF PHD (S-20): sc-46031

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Prolyl hydroxylase domain proteins PHD1, PHD2 and PHD3 (also designated EGLN2, EGLN1, and EGLN3 respectively) can hydroxylate HIF-α subunits. Hypoxia-inducible factor (HIF) is a transcriptional regulator important in several aspects of oxygen homeostasis. The prolyl hydroxylases catalyze the posttranslational formation of 4-hydroxyproline in HIF-α proteins. PHD1, which is widely expressed but in highest levels in testis, functions as a cellular oxygen sensor and is important in cell growth regulation. PHD1, which can localize to the nucleus or the cytoplasm, is also detected in hormone responsive tissues, such as normal and cancerous mammary, ovarian and prostate epithelium. PHD1 is encoded by EGLN2 which maps to chromosome 19q13.3. PHD2 is regarded as the main cellular oxygen sensor as RNA interference against PHD2, but not PHD1 or PHD3, is enough to stabilize HIF-1α in normoxia. PHD2, a direct HIF target gene, is expressed mainly in skeletal muscle, heart, kidney and brain. PHD3 may play a role in the regulation of cell growth in muscle cells and in apoptosis in neuronal tissue. PHD3 is widely expressed although the highest levels can be detected in placenta and heart.

REFERENCES

1. Appelhoff, R.J., Tian, Y.M., Raval, R.R., Turley, H., Harris, A.L., Pugh, C.W., Ratcliffe, P.J. and Gleadle, J.M. 2004. Differential function of the prolyl hydroxylases PHD1, PHD2, and PHD3 in the regulation of hypoxia-inducible factor. J. Biol. Chem. 279: 38458-38465.
2. Aprelikova, O., Chandramouli, G.V., Wood, M., Vasselli, J.R., Riss, J., Maranchie, J.K., Linehan, W.M. and Barrett, J.C. 2004. Regulation of HIF prolyl hydroxylases by hypoxia-inducible factors. J. Cell. Biochem. 92: 491-501.
3. Marxsen, J.H., Stengel, P., Doege, K., Heikkinen, P., Jokilehto, T., Wagner, T., Jelkmann, W., Jaakkola, P. and Metzen, E. 2004. Hypoxia-inducible factor-1 (HIF-1) promotes its degradation by induction of HIF-α-prolyl-4-hydroxylases. Biochem. J. 381: 761-767.
4. Metzen, E., Stiehl, D.P., Doege, K., Marxsen, J.H., Hellwig-Burgel, T. and Jelkmann, W. 2005. Regulation of the prolyl hydroxylase domain protein 2 (phd2/egln-1) gene: identification of a functional hypoxia-responsive element. Biochem. J. 387: 711-717.
5. SWISS-PROT/TrEMBL (Q96KS0). World Wide Web URL: http://www.expasy.ch/sprot/sprot-top.html

SOURCE

HIF PHD (S-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of HIF PHD3 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-46031 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

RESEARCH USE

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

APPLICATIONS

HIF PHD (S-20) is recommended for detection of HIF PHD1, HIF PHD2 and HIF PHD3 of mouse, rat and 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

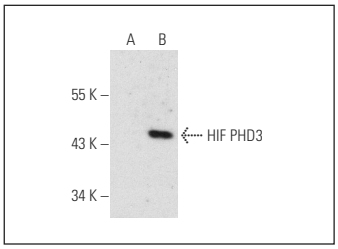
HIF PHD (S-20) is also recommended for detection of HIF PHD1/2/3 in additional species, including equine, canine, bovine, porcine and avian.

Positive Controls: HIF PHD3 (m3): 293T Lysate: sc-122532.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



HIF PHD (S-20): sc-46031. Western blot analysis of HIF PHD3 expression in non-transfected: sc-117752 (**A**) and mouse HIF PHD3 transfected: sc-122532 (**B**) 293T whole cell lysates.

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.