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Catalog Number: NB100-654SS

Background: Hypoxia contributes significantly to the pathophysiology of major categories of human disease, including myocardial and cerebral ischemia, cancer, pulmonary hypertension, congenital heart disease and chronic obstructive pulmonary disease.

HIF-1 is a nuclear protein involved in mammalian oxygen homeostasis. This occurs as a posttranslational modification by prolyl hydroxylation. HIF-1 is a heterodimer composed of HIF-1 alpha and HIF-1 beta subunits. Both subunits are constantly translated. However, under normoxic conditions, human HIF-1 alpha is hydroxylated at Pro402 or Pro564 by a set of HIF prolyl hydroxylases, is polyubiquinated, and eventually degraded in proteosomes. Under hypoxic conditions, the lack of hydroxylation prevents HIF degradation and increases transcriptional activity. Therefore, the concentration of HIF-1 alpha increases in the cell. In contrast, HIF-1 beta remains stable under either condition. HIF hydroxylases provide insight into hypoxic cell responses, which may be used to help isolate therapeutic targets.

Alternate Names: anti-Hypoxia-inducible factor 1 alpha antibody, anti-HIF1 alpha antibody, anti-ARNT interacting proteinantibody, anti-Hif1a antibody, anti-ARNT interacting protein antibody, anti-HIF-1alpha antibody, anti-Hypoxia inducible factor 1 alpha antibody, anti-Hypoxia inducible factor 1 alpha subunit basic helix antibody

Research Areas: 10,348,0

Immunogen: Fusion protein containing amino acids 432-528 of human HIF-1alpha

Specificity: This antibody is specific for HIF-1 alpha.

Localization: Nuclear

Species Reactivity: Reacts with human. Does not react with rat. 93% sequence identity with bovine and pig, and 90% sequence identity with mouse proteins.

Uses: This antibody can be used in western blot. The whole sera version of this antibody, NB 100-134, has been used for IHC-P on rat brain. Results have been mixed (some positive and some negative) on mouse tissue. Based upon titer, this antibody should work as well or better than NB 100-134.
* Other applications have not been tested.

Dilutions: Suggested working dilutions *
Western Blot 1:1000,
Nuclear extracts are recommended.
* Investigator should determine optimal working dilutions.

Positive Controls: COS-7 nuclear extracts (treated)

Packaging: 0.025 ml Affinity purified Rabbit antisera.

Concentration: 1.2 mg/ml

Buffer: Tris-glycine, 150mM NaCl

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Preservative: 0.05% sodium azide

Storage: Aliquot and store at -20C or -80C. Avoid freeze-thaw cycles.

Notes: This antibody is the purified version of NB 100-134. Note that a flash exposure was used for this antibody and that longer exposures may increase background, depending upon sample.

* The mobility of HIF-1 alpha induced by desferrioxamine or cobalt chloride treatment differs from the mobility of the hypoxia-induced protein. The reason is not known.

General References:

1. Wang, G.L. and Semenza, G.L. Purification and Characterization of Hypoxia-inducible Factor 1. Journal of Biological Chemistry. 270(3): 1230-1237, 1995.
2. Semenza, G.L. Hypoxia-inducible factor 1 and the molecular physiology of oxygen homeostasis. J. Lab Clinical Medicine. 131: 207-214, 1998.
3. Kaelin, W.G. Many vessels, faulty gene. Nature. 399: 203-204, 1999.
4. Harvey, A.J., et al. Oxygen-Regulated Gene Expression in Bovine Blastocysts. Biol Reprod. 71: 1108-1119.
5. Bergeron, M., et al. Role of hypoxia-inducible factor-1 in hypoxia-induced ischemic tolerance in neonatal rat brain. Ann. Neurol. 48:285-296, 2000. (Western blot, rat, using NB 100-134)
6. Liu, X., et al. Hypoxia preconditioning of cardiomyocytes and cardioprotection: phophorylation of HIF-1 alpha induced by p42/p44 mitogen-activated protein kinases is involved. Pathophysiology. 00:1-5, 2003. (using NB 100-134)

Gene Id: 3091

Reference Sequence: Q16665

Image(s)