SANTA CRUZ BIOTECHNOLOGY, INC.

Phox2a (37K-2): sc-81978

BACKGROUND

Phox2a (also designated Arix1) and Phox2b are closely related, paired-homeodomain transcription factors that are necessary for neuronal differentiation throughout the developing sympathetic, parasympathetic and enteric ganglia. All enteric nervous system cells evolve from the neural crest, and all cells that are undifferentiated initially express Phox2b. The cells that begin to differentiate along a neuronal lineage continue to express Phox2b, and begin to express Phox2a. Phox2b is required for the differentiation of all central and nonperipheral noradrenergic centers in the brain. In contrast, Phox2a controls only the differentiation of the main noradrenergic center of the brain, the locus ceruleus. Both Phox2a and Phox2b are crucial for the regulation of endogenous tyrosine hydroxylase and dopamine-β hydroxylase, which are transiently expressed in neural crest cells. In addition, Phox2 proteins are sufficient to promote sympathetic neuron generation. The gene which encodes Phox2a maps to human chromosome 11q13.4.

CHROMOSOMAL LOCATION

Genetic locus: PHOX2A (human) mapping to 11q13.4; Phox2a (mouse) mapping to 7 E3.

SOURCE

Phox2a (37K-2) is a mouse monoclonal antibody raised against recombinant Phox2a of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

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 for detailed protocols and support products.

APPLICATIONS

Phox2a (37K-2) is recommended for detection of Phox2a 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).

Suitable for use as control antibody for Phox2a siRNA (h): sc-38762, Phox2a siRNA (m): sc-38763, Phox2a shRNA Plasmid (h): sc-38762-SH, Phox2a shRNA Plasmid (m): sc-38763-SH, Phox2a shRNA (h) Lentiviral Particles: sc-38762-V and Phox2a shRNA (m) Lentiviral Particles: sc-38763-V.

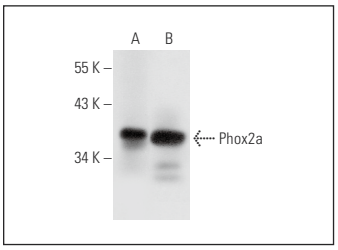
Molecular Weight of Phox2a: 35 kDa.

Positive Controls: PC-12 cell lysate: sc-2250, SH-SY5Y cell lysate: sc-3812 or IMR-32 cell lysate: sc-2409.

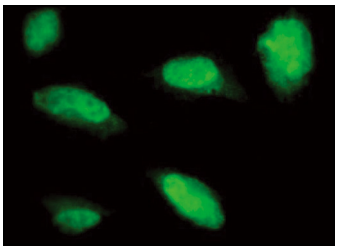
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 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 m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



Phox2a (37K-2): sc-81978. Western blot analysis of Phox2a expression in SH-SY5Y (**A**) and IMR-32 (**B**) whole cell lysates.



Phox2a (37K-2): sc-81978. Immunofluorescence staining of paraformaldehyde-fixed HeLa cells showing nuclear localization.

SELECT PRODUCT CITATIONS

1. van Groningen, T., et al. 2017. Neuroblastoma is composed of two super-enhancer-associated differentiation states. Nat. Genet. 49: 1261-1266.
2. Boeva, V., et al. 2017. Heterogeneity of neuroblastoma cell identity defined by transcriptional circuitries. Nat. Genet. 49: 1408-1413.
3. van Groningen, T., et al. 2019. A NOTCH feed-forward loop drives reprogramming from adrenergic to mesenchymal state in neuroblastoma. Nat. Commun. 10: 1530.
4. Huang, Y., et al. 2021. Combination of tumor necrosis factor-α and epidermal growth factor induces the adrenergic-to-mesenchymal transdifferentiation in SH-SY5Y neuroblastoma cells. Cancer Sci. 112: 715-724.
5. Westerhout, E.M., et al. 2022. Mesenchymal-type neuroblastoma cells escape ALK inhibitors. Cancer Res. 82: 484-496.
6. Karapurkar, J.K., et al. 2023. CRISPR/Cas9-based genome-wide screening of the deubiquitinase subfamily identifies USP3 as a protein stabilizer of REST blocking neuronal differentiation and promotes neuroblastoma tumorigenesis. J. Exp. Clin. Cancer Res. 42: 121.
7. Tao, Y., et al. 2023. Generation of locus coeruleus norepinephrine neurons from human pluripotent stem cells. Nat. Biotechnol. E-published..

RESEARCH USE

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