

Dyrk1A (RR.7): sc-100376

BACKGROUND

Dyrk (for dual specificity tyrosine phosphorylation regulated kinase) is the homolog of the *Drosophila* *mnb* (minibrain) gene which is required for neurogenesis. Dyrk is a dual-specificity tyrosine kinase and serine/threonine kinase, which is itself regulated by tyrosine phosphorylation. Several mammalian Dyrk related proteins have been identified and are thought to compose a family of dual specificity protein kinases. Dyrk family members, including Dyrk1A (dual specificity tyrosine-phosphorylation-regulated kinase 1A), Dyrk1B, Dyrk1C, Dyrk2, Dyrk3, Dyrk4A and Dyrk4B, are thought to be involved in diverse cellular functions. Localized to the nucleus and highly expressed in testis, muscle and the developing nervous system, Dyrk1A, also known as MNB or MNBH, functions to phosphorylate serine, threonine and tyrosine residues on various substrates involved in signaling pathways that regulate cell proliferation. Dyrk1A is a candidate gene for learning defects that are involved in Down syndrome (DS), suggesting a possible role for Dyrk1A in the development of DS. Four isoforms of Dyrk1A exist due to alternative splicing events.

REFERENCES

- Kentrup, H., et al. 1996. Dyrk, a dual specificity protein kinase with unique structural features whose activity is dependent on tyrosine residues between subdomains VII and VIII. *J. Biol. Chem.* 271: 3488-3495.
- Song, W.J., et al. 1996. Isolation of human and murine homologues of the *Drosophila* minibrain gene: human homologue maps to 21q22.2 in the Down syndrome "critical region". *Genomics* 38: 331-339.

CHROMOSOMAL LOCATION

Genetic locus: DYRK1A (human) mapping to 21q22.13; Dyrk1a (mouse) mapping to 16 C4.

SOURCE

Dyrk1A (RR.7) is a mouse monoclonal antibody raised against recombinant Dyrk1A of human origin.

PRODUCT

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

APPLICATIONS

Dyrk1A (RR.7) is recommended for detection of Dyrk1A 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)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Dyrk1A siRNA (h): sc-39007, Dyrk1A siRNA (m): sc-39008, Dyrk1A shRNA Plasmid (h): sc-39007-SH, Dyrk1A shRNA Plasmid (m): sc-39008-SH, Dyrk1A shRNA (h) Lentiviral Particles: sc-39007-V and Dyrk1A shRNA (m) Lentiviral Particles: sc-39008-V.

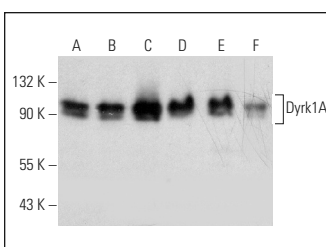
Molecular Weight of Dyrk1A: 86 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, HL-60 whole cell lysate: sc-2209 or Hep G2 cell lysate: sc-2227.

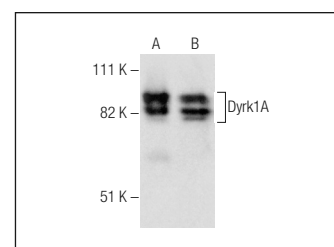
RECOMMENDED SUPPORT REAGENTS

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).

DATA



Dyrk1A (RR.7): sc-100376. Western blot analysis of Dyrk1A expression in HL-60 (A), SH-SY5Y (B), Jurkat (C), NIH/3T3 (D) and PC-12 (E) whole cell lysates and rat brain tissue extract (F).



Dyrk1A (RR.7): sc-100376. Western blot analysis of Dyrk1A expression in HL-60 (A) and Hep G2 (B) whole cell lysates.

SELECT PRODUCT CITATIONS

- De Toma, I., et al. 2019. Dyrk1A overexpression alters cognition and neural-related proteomic pathways in the hippocampus that are rescued by green tea extract and/or environmental enrichment. *Front. Mol. Neurosci.* 12: 272.
- Morrugares, R., et al. 2020. Phosphorylation-dependent regulation of the NOTCH1 intracellular domain by dual-specificity tyrosine-regulated kinase 2. *Cell. Mol. Life Sci.* 77: 2621-2639.
- Trovò, L., et al. 2020. The green tea polyphenol epigallocatechin-3-gallate (EGCG) restores CDKL5-dependent synaptic defects *in vitro* and *in vivo*. *Neurobiol. Dis.* 138: 104791.
- Chen, B., et al. 2021. Dyrk1A negatively regulates CDK5-SOX2 pathway and self-renewal of glioblastoma stem cells. *Int. J. Mol. Sci.* 22: 4011.
- Martin, C.E., et al. 2021. Dyrk1A is required for maintenance of cancer stemness, contributing to tumorigenic potential in oral/oropharyngeal squamous cell carcinoma. *Exp. Cell Res.* 405: 112656.
- Choi, M., et al. 2021. Aristolactam BIII, a naturally derived DYRK1A inhibitor, rescues Down syndrome-related phenotypes. *Phytomedicine* 92: 153695.

STORAGE

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

RESEARCH USE

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