SANTA CRUZ BIOTECHNOLOGY, INC.

Dyrk1B siRNA (h): sc-77210

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 self regulated by tyrosine phosphorylation. Several related mammalian proteins compose the Dyrk family of dual specificity protein kinases, including Dyrk1A, Dyrk1B, Dyrk1C, Dyrk2, Dyrk3, Dyrk4A and Dyrk4B. The Dyrk family members are thought to be involved in the regulation of cellular growth and/or development. Dyrk1B localizes to the nucleus in muscle and testis. Specifically, Dyrk1B plays a critical role in muscle differentiation by regulating motility, transcription, cell cycle progression and cell survival. Dyrk1B is also found is several solid tumors, where it acts as a downstream effector of Rac1 or K-ras to mediate cell survival.

REFERENCES

1. Becker, W., et al. 1998. Sequence characteristics, subcellular localization, and substrate specificity of Dyrk-related kinases, a novel family of dual specificity protein kinases. J. Biol. Chem. 273: 25893-25902.
2. Leder, S., et al. 1999. Cloning and characterization of Dyrk1B, a novel member of the Dyrk family of protein kinases. Biochem. Biophys. Res. Commun. 254: 474-479.
3. Becker, W., et al. 1999. Structural and functional characteristics of Dyrk, a novel subfamily of protein kinases with dual specificity. Prog. Nucleic Acid Res. Mol. Biol. 62: 1-17.
4. Jin, K., et al. 2005. The survival kinase Mirk/Dyrk1B is activated through Rac1-MKK3 signaling. J. Biol. Chem. 280: 42097-42105.
5. Mercer, S.E., et al. 2006. Mirk/Dyrk1B: a multifunctional dual-specificity kinase involved in growth arrest, differentiation, and cell survival. Cell Biochem. Biophys. 45: 303-315.
6. Jin, K., et al. 2007. The survival kinase Mirk/Dyrk1B is a downstream effector of oncogenic K-Ras in pancreatic cancer. Cancer Res. 67: 7247-7255.

CHROMOSOMAL LOCATION

Genetic locus: DYRK1B (human) mapping to 19q13.2.

PRODUCT

Dyrk1B siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Dyrk1B shRNA Plasmid (h): sc-77210-SH and Dyrk1B shRNA (h) Lentiviral Particles: sc-77210-V as alternate gene silencing products.

For independent verification of Dyrk1B (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-77210A, sc-77210B and sc-77210C.

RESEARCH USE

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

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Dyrk1B siRNA (h) is recommended for the inhibition of Dyrk1B expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

Dyrk1B (H-6): sc-390417 is recommended as a control antibody for monitoring of Dyrk1B gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

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) 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Dyrk1B gene expression knockdown using RT-PCR Primer: Dyrk1B (h)-PR: sc-77210-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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