SANTA CRUZ BIOTECHNOLOGY, INC.

BDNF (C-9): sc-8042

BACKGROUND

Neurotrophins function to regulate naturally occurring cell death of neurons during development. The prototype neurotrophin is nerve growth factor (NGF), originally discovered in the 1950s as a soluble peptide promoting the survival of, and neurite outgrowth from, sympathetic ganglia. Three additional structurally homologous neurotrophic factors have been identified. These include brain-derived neurotrophic factor (BDNF), neurotrophin-3 (NT-3) and neurotrophin-4 (NT-4) (also designated NT-5). These various neurotrophins stimulate the *in vitro* survival of distinct, but partially overlapping, populations of neurons. The cell surface receptors through which neurotrophins mediate their activity have been identified. For instance, the Trk A receptor is the preferential receptor for NGF, but also binds NT-3 and NT-4. The Trk B receptor binds both BDNF and NT-4 equally well, and binds NT-3 to a lesser extent, while the Trk C receptor only binds NT-3.

REFERENCES

1. Oppenheim, R.W. 1991. Cell death during development of the nervous system. Annu. Rev. Neurosci. 14: 453-501.
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3. Chao, K.K., et al. 1992. Neurotrophin receptors: a window into neuronal differentiation. Neuron 9: 583-593.
4. Korsching, S. 1993. The neurotrophic factor concept: a reexamination. J. Neurosci. 13: 2739-2748.
5. Ip, N.Y., et al. 1993. Similarities and differences in the way neurotrophins interact with the Trk receptors in neuronal and nonneuronal cells. Neuron 10: 137-149.
6. Klein, R. 1994. Role of neurotrophins in mouse neuronal development. FASEB J. 8: 738-744.
7. Mowla, S.J., et al. 2001. Biosynthesis and post-translational processing of the precursor to brain-derived neurotrophic factor. J. Biol. Chem. 276: 12660-12666.
8. Du, J.L., et al. 2004. Rapid BDNF-induced retrograde synaptic modification in a developing retinotectal system. Nature 429: 878-883.
9. Coull, J.A., et al. 2005. BDNF from microglia causes the shift in neuronal anion gradient underlying neuropathic pain. Nature 438: 1017-1021.

CHROMOSOMAL LOCATION

Genetic locus: BDNF (human) mapping to 11p14.1; Bdnf (mouse) mapping to 2 E3.

SOURCE

BDNF (C-9) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 125-150 within an internal region of BDNF of human origin.

RESEARCH USE

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

PRODUCT

Each vial contains 200 µg IgG_{2a} in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

BDNF (C-9) is recommended for detection of precursor and mature BDNF of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

BDNF (C-9) is also recommended for detection of precursor and mature BDNF in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for BDNF siRNA (h): sc-42121, BDNF siRNA (m): sc-42122, BDNF shRNA Plasmid (h): sc-42121-SH, BDNF shRNA Plasmid (m): sc-42122-SH, BDNF shRNA (h) Lentiviral Particles: sc-42121-V and BDNF shRNA (m) Lentiviral Particles: sc-42122-V.

Molecular Weight of BDNF precursor: 32 kDa.

Molecular Weight of mature BDNF: 14 kDa.

Positive Controls: mouse skin, SH-SY5Y cell lysate: sc-3812 or U-87 MG cell lysate: sc-2411.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (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) Immunofluorescence: use goat anti-mouse IgG-FITC: sc-2010 (dilution range: 1:100-1:400) or goat anti-mouse IgG-TR: sc-2781 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941. 3) Immunohistochemistry: use ImmunoCruz™: sc-2050 or ABC: sc-2017 mouse IgG Staining Systems.

SELECT PRODUCT CITATIONS

1. Johnson, E.C., et al. 2000. Chronology of optic nerve head and retinal responses to elevated intraocular pressure. Invest. Ophthalmol. Vis. Sci. 41: 431-442.
2. Cardile, V., et al. 2003. Expression of brain-derived neurotrophic factor (BDNF) and inducible nitric oxide synthase (iNOS) in rat astrocyte cultures treated with Levetiracetam. Brain Res. 976: 227-233.
3. Ren-Patterson, R.F., et al. 2006. Gender-dependent modulation of brain monoamines and anxiety-like behaviors in mice with genetic serotonin transporter and BDNF deficiencies. Cell. Mol. Neurobiol. 26: 755-780.

STORAGE

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