

Microcephalin (K-15): sc-48880

BACKGROUND

Microcephalin (MCPH1, BRCT-repeat inhibitor of TERT expression 1, BRIT1) modulates brain size and has been proliferating under strong positive selection for several thousand years, although the nature of the positive selection is poorly understood. Human Microcephalin contains three BRCA1 C-terminal (BRCT) domains and shares 57% identity with its mouse ortholog, the most conserved regions being BRCT domains where there is 80% identity. Predominant expression of human Microcephalin is observed in fetal brain, liver and kidney tissues and is expressed during neurogenesis in mice. Microcephalin displays significantly higher rates of protein evolution in primates than in rodents; this trend is most noticeable for the subset of genes associated with nervous system development. Microcephalin has a very young, single nucleotide, polymorphism haplotype associated with modern humans; this gene is presumably still evolving in *Homo sapiens*. It functions in DNA damage response and regulation of cell cycle checkpoints.

REFERENCES

1. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 607117. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
2. Kumar, A., Blanton, S.H., Babu, M., Markandaya, M. and Girimaji, S.C. 2004. Genetic analysis of primary microcephaly in Indian families: novel ASPM mutations. *Clin. Genet.* 66: 341-348.
3. Wang, Y.Q. and Su, B. 2004. Molecular evolution of Microcephalin, a gene determining human brain size. *Hum. Mol. Genet.* 13: 1131-1137.
4. Xu, X., Lee, J. and Stern, D.F. 2004. Microcephalin is a DNA damage response protein involved in regulation of CHK1 and BRCA1. *J. Biol. Chem.* 279: 34091-34094.
5. Ponting, C. and Jackson, A.P. 2005. Evolution of primary microcephaly genes and the enlargement of primate brains. *Curr. Opin. Genet. Dev.* 15: 241-248.
6. Woods, C.G., Bond, J. and Enard, W. 2005. Autosomal recessive primary microcephaly (MCPH): a review of clinical, molecular and evolutionary findings. *Am. J. Hum. Genet.* 76: 717-728.
7. Alderton, G.K., Galbiati, L., Griffith, E., Surinya, K.H., Neitzel, H., Jackson, A.P., Jeggo, P.A. and O'Driscoll, M. 2006. Regulation of mitotic entry by Microcephalin and its overlap with ATR signalling. *Nat. Cell Biol.* 8: 725-733.
8. Bartek, J. 2006. Microcephalin guards against small brains, genetic instability and cancer. *Cancer Cell* 10: 91-93.
9. Tang, B.L. 2006. Molecular genetic determinants of human brain size. *Biochem. Biophys. Res. Commun.* 345: 911-916.

CHROMOSOMAL LOCATION

Genetic locus: MCPH1 (human) mapping to 8p23.1; Mcph1 (mouse) mapping to 8 A1.3.

RESEARCH USE

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

SOURCE

Microcephalin (K-15) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the N-terminus of Microcephalin of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-48880 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

Available as TransCruz reagent for Gel Supershift and ChIP applications, sc-48880 X, 200 µg/0.1 ml.

APPLICATIONS

Microcephalin (K-15) is recommended for detection of Microcephalin 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 solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Microcephalin (K-15) is also recommended for detection of Microcephalin in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for Microcephalin siRNA (h): sc-61042, Microcephalin siRNA (m): sc-61043, Microcephalin shRNA Plasmid (h): sc-61042-SH, Microcephalin shRNA Plasmid (m): sc-61043-SH, Microcephalin shRNA (h) Lentiviral Particles: sc-61042-V and Microcephalin shRNA (m) Lentiviral Particles: sc-61043-V.

Microcephalin (K-15) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

Molecular Weight of Microcephalin: 93 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (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 donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

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 or our catalog for detailed protocols and support products.