

AspRS (D-4): sc-166534

BACKGROUND

AspRS (mitochondrial aspartyl-tRNA synthetase), also known as aspartate-tRNA ligase or DARS2, is a 645 amino acid protein that belongs to the class-II aminoacyl-tRNA synthetase family. Localized to the mitochondrial matrix, AspRS exists as a homodimer and functions, primarily, to aminoacylate tRNA. Also, AspRS contains a 47 amino acid mitochondrial targeting signal, as well as several conserved residues involved in ATP binding, tRNA binding and aspartic acid recognition. The gene encoding AspRS maps to chromosome 1q25.1. Defects in this gene are a cause of leukoencephalopathy with brain stem and spinal cord involvement and lactate elevation (LBSL). LBSL is an autosomal recessive disease characterized by cerebellar ataxia, spasticity and dorsal column dysfunction, sometimes with a mild cognitive deficit.

REFERENCES

1. Thompson, D., et al. 2006. Molecular dynamics simulations show that bound Mg²⁺ contributes to amino acid and aminoacyl adenylate binding specificity in aspartyl-tRNA synthetase through long range electrostatic interactions. *J. Biol. Chem.* 281: 23792-23803.
2. Cardoso, A.M., et al. 2006. A non-discriminating aspartyl-tRNA synthetase from *Halobacterium salinarum*. *RNA Biol.* 3: 110-114.
3. Bernard, D., et al. 2007. Inhibition by L-aspartol adenylate of a nondiscriminating aspartyl-tRNA synthetase reveals differences between the interactions of its active site with tRNA(Asp) and tRNA(Asn). *J. Enzyme Inhib. Med. Chem.* 22: 77-82.
4. Kazakov, T., et al. 2007. Amino acid residues required for maturation, cell uptake, and processing of translation inhibitor microcin C. *J. Bacteriol.* 189: 2114-2118.
5. Scheper, G.C., et al. 2007. Mitochondrial aspartyl-tRNA synthetase deficiency causes leukoencephalopathy with brain stem and spinal cord involvement and lactate elevation. *Nat. Genet.* 39: 534-539.
6. Online Mendelian Inheritance in Man, OMIM™. 2008. Johns Hopkins University, Baltimore, MD. MIM Number: 610956. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
7. Messmer, M., et al. 2009. Peculiar inhibition of human mitochondrial aspartyl-tRNA synthetase by adenylate analogs. *Biochimie* 91: 596-603.
8. Bour, T., et al. 2009. Plasmodial aspartyl-tRNA synthetases and peculiarities in *Plasmodium falciparum*. *J. Biol. Chem.* 284: 18893-18903.

CHROMOSOMAL LOCATION

Genetic locus: DARS2 (human) mapping to 1q25.1.

SOURCE

AspRS (D-4) is a mouse monoclonal antibody raised against amino acids 346-645 mapping at the C-terminus of AspRS of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

AspRS (D-4) is recommended for detection of AspRS of human origin by Western Blotting (starting dilution 1:100, 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), immunohistochemistry (including paraffin-embedded sections) (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 AspRS siRNA (h): sc-72570, AspRS shRNA Plasmid (h): sc-72570-SH and AspRS shRNA (h) Lentiviral Particles: sc-72570-V.

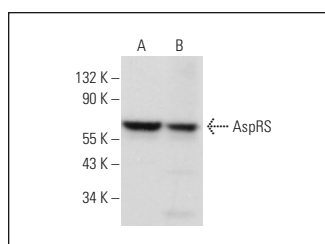
Molecular Weight of AspRS: 66 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, HL-60 whole cell lysate: sc-2209 or Caki-1 cell lysate: sc-2224.

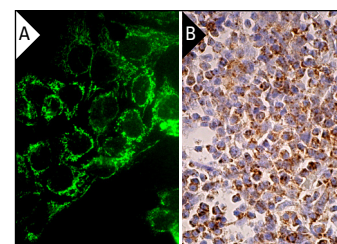
RECOMMENDED SUPPORT REAGENTS

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. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



AspRS (D-4): sc-166534. Western blot analysis of AspRS expression in Caki-1 (A) and HL-60 (B) whole cell lysates.



AspRS (D-4): sc-166534. Immunofluorescence staining of formalin-fixed Hep G2 cells showing cytoplasmic localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human tonsil tissue showing cytoplasmic staining of cells in germinal and non-germinal centers (B).

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.