SANTA CRUZ BIOTECHNOLOGY, INC.

AsnRS (G-8): sc-271059

BACKGROUND

AsnRS (cytoplasmic asparaginyl-tRNA synthetase, asparagine-tRNA ligase) is a cytoplasmic protein encoded by the human gene NARS. AsnRS belongs to the class-II aminoacyl-tRNA synthetase family. Aminoacyl tRNA synthetases (aaRS) are enzymes that catalyze the esterification of a specific amino acid or its precursor to its compatible cognate tRNA to form an aminoacyl-tRNA. The synthetase first binds ATP and the corresponding amino acid or its precursor to form an aminoacyl-adenylate and release inorganic pyrophosphate (PPi). The adenylate-aaRS complex then binds the appropriate tRNA molecule, and the amino acid is transferred from the aa-AMP to either the 2'- or 3'-OH of the last tRNA base (A76) at the 3'-end. Some synthetases also mediate a proofreading reaction to ensure high fidelity of tRNA charging; if the tRNA is found to be improperly charged, the aminoacyl-tRNA bond is hydrolyzed. AsnRS acts to attach asparagine residues to its cognate tRNA. AsnRS autoantibodies have a strong association with interstitial lung disease (ILD) and may be associated with the DR2 phenotype. In bacteria that lack AsnRS, AspRS (aspartyl-tRNA synthetase) acts to generate both Asp-tRNA (Asp) and the noncanonical, mis-acylated Asp-tRNA (Asn-tRNA).

REFERENCES

1. Ramirez, B.L., et al. 2006. *Brugia malayi* asparaginyl-transfer RNA synthetase induces chemotaxis of human leukocytes and activates G protein-coupled receptors CXCR1 and CXCR2. J. Infect. Dis. 193: 1164-1171.
2. Sukuru, S.C., et al. 2006. Discovering new classes of *Brugia malayi* asparaginyl-tRNA synthetase inhibitors and relating specificity to conformational change. J. Comput. Aided Mol. Des. 20: 159-178.
3. Iwasaki, W., et al. 2006. Structural basis of the water-assisted asparagine recognition by asparaginyl-tRNA synthetase. J. Mol. Biol. 360: 329-342.
4. Chuawong, P., et al. 2006. The nondiscriminating aspartyl-tRNA synthetase from *Helicobacter pylori:* anticodon-binding domain mutations that impact tRNA specificity and heterologous toxicity. Biochemistry 45: 8079-8087.
5. Hirakata, M., et al. 2007. Clinical and immunogenetic features of patients with autoantibodies to asparaginyl-transfer RNA synthetase. Arthritis Rheum. 56: 1295-1303.
6. Sato, Y., et al. 2007. Structure of the nondiscriminating aspartyl-tRNA synthetase from the crenarchaeon *Sulfolobus tokodaii* strain 7 reveals the recognition mechanism for two different tRNA anticodons. Acta Crystallogr. D, Biol. Crystallogr. 63: 1042-1047.

CHROMOSOMAL LOCATION

Genetic locus: NARS (human) mapping to 18q21.31; Nars (mouse) mapping to 18 E1.

SOURCE

AsnRS (G-8) is a mouse monoclonal antibody raised against amino acids 1-289 mapping at the N-terminus of AsnRS of human origin.

PRODUCT

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

APPLICATIONS

AsnRS (G-8) is recommended for detection of AsnRS of mouse, rat and 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 AsnRS siRNA (h): sc-72565, AsnRS siRNA (m): sc-72566, AsnRS shRNA Plasmid (h): sc-72565-SH, AsnRS shRNA Plasmid (m): sc-72566-SH, AsnRS shRNA (h) Lentiviral Particles: sc-72565-V and AsnRS shRNA (m) Lentiviral Particles: sc-72566-V.

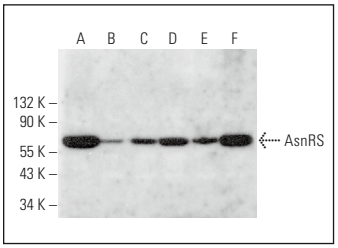
Molecular Weight of AsnRS: 63 kDa.

Positive Controls: MOLT-4 cell lysate: sc-2233, 3T3-L1 cell lysate: sc-2243 or K-562 whole cell lysate: sc-2203.

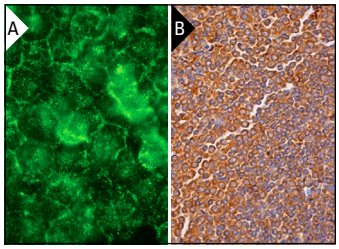
RECOMMENDED SUPPORT REAGENTS

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 L-Agarose: sc-2336 (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



AsnRS (G-8): sc-271059. Western blot analysis of AsnRS expression in K-562 (**A**), HEL 92.1.7 (**B**), 3T3-L1 (**C**), MOLT-4 (**D**), M1 (**E**) and WEHI-231 (**F**) whole cell lysates.



AsnRS (G-8): sc-271059. Immunofluorescence staining of methanol-fixed HeLa cells showing membrane localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human spleen tissue showing cytoplasmic staining of cells in white pulp and cells in red pulp (**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.