

GlyRS (D-10): sc-365311

BACKGROUND

The fidelity of protein synthesis requires efficient discrimination of amino acid substrates by aminoacyl-tRNA synthetases. Proteins belonging to this family function to catalyze the aminoacylation of tRNAs by their corresponding amino acids, thus linking amino acids with tRNA-contained nucleotide triplets. GlyRS (Glycyl-tRNA synthetase), also known as Glycine-tRNA ligase, is a 739 amino acid class II synthetase that is widely expressed, including in the brain and spinal cord. Defects in the gene encoding GlyRS is the cause of Charcot-Marie-Tooth disease type 2D (CMT2D), which is an autosomal dominant inherited disease characterized by severe weakness, atrophy and absence of deep tendon reflexes in the upper extremities. Defects in the GlyRS gene is also the cause of distal hereditary muscular neuropathy type V (HMN5), a disease similar to CMT2D, though the distal sensory involvement is less severe in HMN5 patients.

REFERENCES

1. Shiba, K., et al. 1994. Human glycyl-tRNA synthetase. Wide divergence of primary structure from bacterial counterpart and species-specific aminoacylation. *J. Biol. Chem.* 269: 30049-30055.
2. Williams, J., et al. 1995. Cloning, sequencing and bacterial expression of human glycine tRNA synthetase. *Nucleic Acids Res.* 23: 1307-1310.
3. Antonellis, A., et al. 2003. Glycyl tRNA synthetase mutations in Charcot-Marie-Tooth disease type 2D and distal spinal muscular atrophy type V. *Am. J. Hum. Genet.* 72: 1293-1299.

CHROMOSOMAL LOCATION

Genetic locus: GARS (human) mapping to 7p14.3; Gars (mouse) mapping to 6 B3.

SOURCE

GlyRS (D-10) is a mouse monoclonal antibody raised against amino acids 440-732 mapping at the C-terminus of GlyRS of human origin.

PRODUCT

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

GlyRS (D-10) is available conjugated to agarose (sc-365311 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365311 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365311 PE), fluorescein (sc-365311 FITC), Alexa Fluor® 488 (sc-365311 AF488), Alexa Fluor® 546 (sc-365311 AF546), Alexa Fluor® 594 (sc-365311 AF594) or Alexa Fluor® 647 (sc-365311 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-365311 AF680) or Alexa Fluor® 790 (sc-365311 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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STORAGE

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

APPLICATIONS

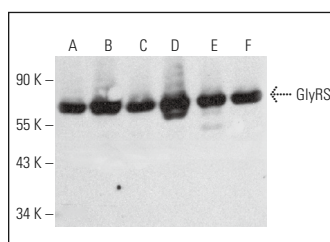
GlyRS (D-10) is recommended for detection of GlyRS of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 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).

GlyRS (D-10) is also recommended for detection of GlyRS in additional species, including equine, canine, bovine and porcine.

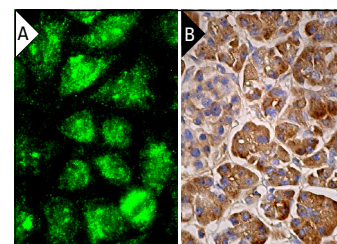
Suitable for use as control antibody for GlyRS siRNA (h): sc-75153, GlyRS siRNA (m): sc-75154, GlyRS shRNA Plasmid (h): sc-75153-SH, GlyRS shRNA Plasmid (m): sc-75154-SH, GlyRS shRNA (h) Lentiviral Particles: sc-75153-V and GlyRS shRNA (m) Lentiviral Particles: sc-75154-V.

Molecular Weight of GlyRS: 75-80 kDa.

DATA



GlyRS (D-10): sc-365311. Western blot analysis of GlyRS expression in A-431 (A), Raji (B), RAW 264.7 (C), Neuro-2A (D), C6 (E) and NRK (F) whole cell lysates.



GlyRS (D-10): sc-365311. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic and nuclear localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human pancreas tissue showing cytoplasmic staining of glandular cells and Islets of Langerhans (B).

SELECT PRODUCT CITATIONS

1. Mo, Z., et al. 2016. Neddylation requires glycyl-tRNA synthetase to protect activated E2. *Nat. Struct. Mol. Biol.* 23: 730-737.
2. Yu, M., et al. 2019. Amino acids stimulate glycyl-tRNA synthetase nuclear localization for mammalian target of rapamycin expression in bovine mammary epithelial cells. *J. Cell. Physiol.* 234: 7608-7621.
3. Luo, C., et al. 2020. Methionine stimulates GlyRS phosphorylation via the GPR87-CDC42/Rac1-MAP3K10 signaling pathway. *Biochem. Biophys. Res. Commun.* 523: 847-852.
4. Deitersen, J., et al. 2021. High-throughput screening for natural compound-based autophagy modulators reveals novel chemotherapeutic mode of action for arzanol. *Cell Death Dis.* 12: 560.
5. Wang, L., et al. 2022. METTL3 is a key regulator of milk synthesis in mammary epithelial cells. *Cell Biol. Int.* 46: 359-369.

RESEARCH USE

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