

TyrRS (A-10): sc-393787

BACKGROUND

Tryptophanyl-tRNA synthetases are essential enzymes that catalyze the aminoacylation of tRNA(Trp) with tryptophan, an essential function of the cell's protein synthesis machinery. Two forms of tryptophanyl-tRNA synthetase exist; a cytoplasmic form, named TrpRS (also known as YARS), and a mitochondrial form (mt-TyrRS), named YARS2. In normal cells, human TrpRS exists as a full length form and as a truncated form designated mini TrpRS, which is produced by alternative splicing. Expression of mini TrpRS is highly stimulated in human cells by the addition of IFN- γ . Although both human full length TrpRS and mini TrpRS are enzymatically active in aminoacylation, they differ in angiostatic activity. The tyrosyl-tRNA synthetase (TyrRS), a protein related to TrpRS, exists as a homodimeric enzyme that catalyzes the aminoacylation of tRNA(Tyr) by L-tyrosine.

REFERENCES

1. Wakasugi, K., et al. 2002. A human aminoacyl-tRNA synthetase as a regulator of angiogenesis. *Proc. Natl. Acad. Sci. USA* 99: 173-177.
2. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 191050. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
3. Jia, J., et al. 2003. Expression, purification, and characterization of human tyrosyl-tRNA synthetase. *Protein Expr. Purif.* 27: 104-108.
4. Yang, X.L., et al. 2004. Relationship of two human tRNA synthetases used in cell signaling. *Trends Biochem. Sci.* 29: 250-256.
5. Kise, Y., et al. 2004. A short peptide insertion crucial for angiostatic activity of human tryptophanyl-tRNA synthetase. *Nat. Struct. Mol. Biol.* 11: 149-156.
6. Bonnefond, L., et al. 2005. Human mitochondrial TyrRS disobeys the tyrosine identity rules. *RNA* 11: 558-562.
7. Bonnefond, L., et al. 2005. Toward the full set of human mitochondrial aminoacyl-tRNA synthetases: characterization of AspRS and TyrRS. *Biochemistry* 44: 4805-4816.
8. LocusLink Report (LocusID: 8565). <http://www.ncbi.nlm.nih.gov/LocusLink/>

CHROMOSOMAL LOCATION

Genetic locus: YARS (human) mapping to 1p35.1; Yars (mouse) mapping to 4 D2.2.

SOURCE

TyrRS (A-10) is a mouse monoclonal antibody raised against amino acids 1-164 mapping at the N-terminus of TyrRS of human origin.

PRODUCT

Each vial contains 200 μ g IgG $_1$ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

RESEARCH USE

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

APPLICATIONS

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

Suitable for use as control antibody for TyrRS siRNA (h): sc-37671, TyrRS siRNA (m): sc-37672, TyrRS shRNA Plasmid (h): sc-37671-SH, TyrRS shRNA Plasmid (m): sc-37672-SH, TyrRS shRNA (h) Lentiviral Particles: sc-37671-V and TyrRS shRNA (m) Lentiviral Particles: sc-37672-V.

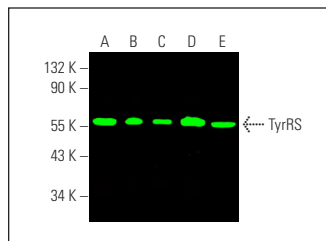
Molecular Weight of TyrRS: 59 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, Jurkat whole cell lysate: sc-2204 or SH-SY5Y cell lysate: sc-3812.

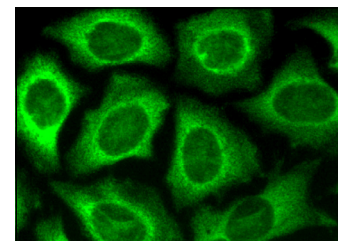
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ 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-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



TyrRS (A-10) Alexa Fluor® 680: sc-393787 AF680. Direct near-infrared western blot analysis of TyrRS expression in Jurkat (A), SH-SY5Y (B), ECV304 (C), K-562 (D) and Neuro-2A (E) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214.



TyrRS (A-10): sc-393787. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Won, E., et al. 2020. Extracellular tyrosyl-tRNA synthetase cleaved by plasma proteinases and stored in platelet α -granules: potential role in monocyte activation. *Res. Pract. Thromb. Haemost.* 4: 1167-1177.

STORAGE

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