

Store at -20C
#9990

LysRS (D16D1) Rabbit mAb



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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB, IP, IF-IC	H M R Mk	Endogenous	75	Rabbit IgG	#Q15046	3735

Product Usage Information

Application

Western Blotting
Immunoprecipitation
Immunofluorescence (Immunocytochemistry)

Dilution

1:1000
1:50
1:200

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C. Do not aliquot the antibody.

Specificity / Sensitivity

LysRS (D16D1) Rabbit mAb recognizes endogenous levels of total LysRS protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human LysRS protein.

Background

Lysyl-tRNA synthetase (LysRS) is a multifunctional protein that has both regular and mitochondrial forms. The regular form of LysRS belongs to a family of aminoacyl-tRNA synthetases (aaRSs) that catalyze amino acid attachment to its cognate tRNA. In mammalian systems, LysRS forms a multisystem complex (MSC) with several other aaRSs (1-3). In addition to its conventional function, LysRS regulates diadenosine tetraphosphate (Ap4A) production (3). Cellular and metabolic stress increases the level of Ap4A, which functions as a cellular alarm system (3-5). Following FcεRI aggregation in mast cells, MAPK/Erk kinase (MEK) phosphorylates LysRS at Ser207 (5). Serine phosphorylation of LysRS leads to the release of LysRS from MSC and its translocation into the nucleus (5), as well as increased synthesis of Ap4A (5,6). LysRS binds to microphthalmia transcription factor (MITF) and MITF repressor Hint-1. Upon binding of Ap4A, Hint-1 is released from the complex that in turn allows the transcription of MITF-responsive genes (5-7). LysRS is also involved in HIV viral assembly through incorporation into HIV-1 virions via an interaction with HIV-1 Gag (8). Research studies have shown that in the presence of mutant Cu,Zn-superoxide dismutase (SOD1), mitochondrial LysRS tends to be misfolded and degraded by proteasomal degradation, contributing to mitochondrial dysfunction in Amyotrophic Lateral Sclerosis (ALS) (9). LysRS is also secreted and has cytokine-like functions (10). LysRS was also found to be an autoantigen in autoimmune responses (11).

Background References

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4. Yannay-Cohen, N. et al. (2009) *Mol Cell* 34, 603-11.
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6. Lee, Y.N. et al. (2004) *Immunity* 20, 145-51.
7. Nechushtan, H. and Razin, E. (2002) *Mol Immunol* 38, 1177-80.
8. Kovalski, B.J. et al. (2006) *J Biol Chem* 281, 19449-56.
9. Kawamata, H. et al. (2008) *J Biol Chem* 283, 28321-8.
10. Park, S.G. et al. (2005) *Proc Natl Acad Sci USA* 102, 6356-61.
11. Linke, A.T. et al. (2001) *Clin Exp Immunol* 126, 173-9.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

WB: Western Blotting **IP:** Immunoprecipitation **IF-IC:** Immunofluorescence (Immunocytochemistry)

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster
X: Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse
GP: Guinea Pig **Rab:** rabbit **All:** all species expected

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