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AlaRS (AARS) Antibody (N-term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP7558a

Product Information

Application	WB, IHC-P, E
Primary Accession	P49588
Other Accession	Q23122, P50475, Q8BGQ7, Q9VLM8, O01541
Reactivity	Human
Predicted	C.Elegans, Drosophila, Mouse, Rat, Bovine, Canine, Rabbit, Chicken
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Clone Names	RB14611
Calculated MW	106810
Antigen Region	61-91

Additional Information

Gene ID	16
Other Names	Alanine--tRNA ligase, cytoplasmic {ECO:0000255|HAMAP-Rule:MF_03133}, 6117 {ECO:0000255|HAMAP-Rule:MF_03133}, Alanyl-tRNA synthetase {ECO:0000255|HAMAP-Rule:MF_03133}, AlaRS {ECO:0000255|HAMAP-Rule:MF_03133}, Renal carcinoma antigen NY-REN-42, AARS {ECO:0000255|HAMAP-Rule:MF_03133}
Target/Specificity	This AlaRS (AARS) antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 61-91 amino acids from the N-terminal region of human AlaRS (AARS).
Dilution	WB~~1:1000 IHC-P~~1:100~500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	AlaRS (AARS) Antibody (N-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	AARS1 {ECO:0000303|PubMed:38653238, ECO:0000312|HGNC:HGNC:20}

Function	Catalyzes the attachment of alanine to tRNA(Ala) in a two- step reaction: alanine is first activated by ATP to form Ala-AMP and then transferred to the acceptor end of tRNA(Ala) (PubMed:27622773, PubMed:27911835, PubMed:28493438, PubMed:33909043). Also edits incorrectly charged tRNA(Ala) via its editing domain (PubMed:27622773, PubMed:27911835, PubMed:28493438, PubMed:29273753). In presence of high levels of lactate, also acts as a protein lactyltransferase that mediates lactylation of lysine residues in target proteins, such as TEAD1, TP53/p53 and YAP1 (PubMed:38512451, PubMed:38653238). Protein lactylation takes place in a two-step reaction: lactate is first activated by ATP to form lactate-AMP and then transferred to lysine residues of target proteins (PubMed:38512451, PubMed:38653238, PubMed:39322678). Acts as an inhibitor of TP53/p53 activity by catalyzing lactylation of TP53/p53 (PubMed:38653238). Acts as a positive regulator of the Hippo pathway by mediating lactylation of TEAD1 and YAP1 (PubMed:38512451).
Cellular Location	Cytoplasm {ECO:0000255|HAMAP-Rule:MF_03133, ECO:0000269|PubMed:27911835, ECO:0000269|PubMed:38512451}. Nucleus. Note=Translocates to the nucleus in response to increased levels of lactate; nuclear translocation is dependent on KPNA4.

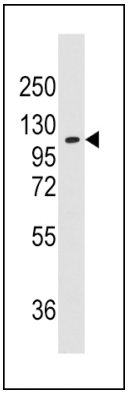
Background

The human alanyl-tRNA synthetase (AARS) belongs to a family of tRNA synthases,of the class II enzymes.Class II tRNA synthases evolved early in evolution and are highly conserved.This is reflected by the fact that 498 of the 968-residue polypeptide human AARS shares 41% identity witht the E.coli protein.tRNA synthases are the enzymes that interpret the RNA code and attach specific aminoacids to the tRNAs that contain the cognate trinucleotide anticodons.They consist of a catalytic domain which interacts with the amino acid acceptor-T psi C helix of the tRNA, and a second domain which interacts with the rest of the tRNA structure.

References

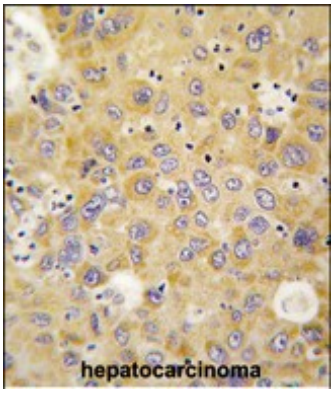
Shiba,K.,Biochemistry 34 (33), 10340-10349 (1995)
Ripmaster,T.L.,Proc. Natl. Acad. Sci. U.S.A. 92 (11), 4932-4936 (1995)
Sang Lee,J.,Cell 127 (3), 635-648 (2006)

Images



Western blot analysis of anti-AARS Pab (Cat.#AP7558a) in K562 cell line lysates (35ug/lane).AARS (arrow) was detected using the purified Pab.

Formalin-fixed and paraffin-embedded human hepatocarcinoma tissue reacted with AARS antibody (N-term) (Cat.#AP7558a), which was peroxidase-conjugated to the secondary antibody,



followed by DAB staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated.

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