

# IleRS (D-9): sc-271826

## BACKGROUND

The fidelity of protein synthesis requires efficient discrimination of amino acid substrates by aminoacyl-tRNA synthetases. Accurate discrimination of the structurally similar amino acids valine and isoleucine by isoleucyl-tRNA synthetase (IleRS) results, in part, from a hydrolytic editing reaction, which prevents misactivated valine from being stably joined to tRNA<sup>Ile</sup>. IleRS joins Ile to tRNA(Ile) at its synthetic active site and hydrolyzes incorrectly acylated amino acids at its editing active site. A member of the aminoacyl-tRNA synthetase family, human IleRS has been identified as a target of antibodies in the autoimmune disease polymyositis.

## REFERENCES

- Nichols, R.C., et al. 1995. Human isoleucyl-tRNA synthetase: sequence of the cDNA, alternative mRNA splicing, and the characteristics of an unusually long C-terminal. *Gene* 155: 299-304.
- Nordin, B.E. and Schimmel, P. 1999. RNA determinants for translational editing. Mischarging a minihelix substrate by a tRNA synthetase. *J. Biol. Chem.* 274: 6835-6838.
- Silvian, L.F., et al. 1999. Insights into editing from an Ile-tRNA synthetase structure with tRNA<sup>Ile</sup> and mupirocin. *Science* 285: 1074-1077.
- Nakama, T., et al. 2001. Structural basis for the recognition of isoleucyl-adenylate and an antibiotic, mupirocin, by isoleucyl-tRNA synthetase. *J. Biol. Chem.* 276: 47387-47393.
- Nordin, B.E. and Schimmel, P. 2003. Transiently misacylated tRNA is a primer for editing of misactivated adenylates by class I aminoacyl-tRNA synthetases. *Biochemistry* 42: 12989-12997.
- SWISS-PROT/TrEMBL (P41252). World Wide Web URL: <http://www.expasy.ch/sprot/sprot-top.html>

## CHROMOSOMAL LOCATION

Genetic locus: IARS (human) mapping to 9q22.31; lars (mouse) mapping to 13 A5.

## SOURCE

IleRS (D-9) is a mouse monoclonal antibody raised against amino acids 781-999 mapping within an internal region of IleRS of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

IleRS (D-9) is available conjugated to agarose (sc-271826 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271826 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271826 PE), fluorescein (sc-271826 FITC), Alexa Fluor® 488 (sc-271826 AF488), Alexa Fluor® 546 (sc-271826 AF546), Alexa Fluor® 594 (sc-271826 AF594) or Alexa Fluor® 647 (sc-271826 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271826 AF680) or Alexa Fluor® 790 (sc-271826 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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## APPLICATIONS

IleRS (D-9) is recommended for detection of IleRS of mouse 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

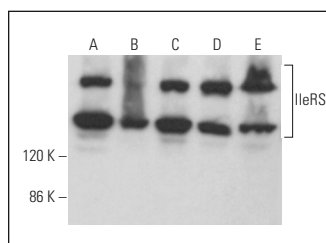
IleRS (D-9) is recommended for detection of IleRS of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for IleRS siRNA (h): sc-45473, IleRS siRNA (m): sc-45474, IleRS shRNA Plasmid (h): sc-45473-SH, IleRS shRNA Plasmid (m): sc-45474-SH, IleRS shRNA (h) Lentiviral Particles: sc-45473-V and IleRS shRNA (m) Lentiviral Particles: sc-45474-V.

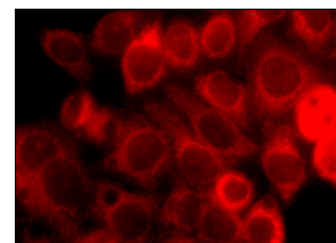
Molecular Weight of IleRS: 145 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, Jurkat whole cell lysate: sc-2204 or F9 cell lysate: sc-2245.

## DATA



IleRS (D-9): sc-271826. Western blot analysis of IleRS expression in Jurkat (A), Caki-1 (B), HeLa (C), F9 (D) and c4 (E) whole cell lysates.



IleRS (D-9): sc-271826. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

## SELECT PRODUCT CITATIONS

- Jeong, S.J., et al. 2019. A threonyl-tRNA synthetase-mediated translation initiation machinery. *Nat. Commun.* 10: 1357.

## 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.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.