

ValRS (D-7): sc-166674

BACKGROUND

The fidelity of protein synthesis requires efficient discrimination of amino acid substrates by aminoacyl-tRNA synthetases. ValRS (valyl-tRNA synthetase), also known as Protein G7a, belongs to the class-I aminoacyl-tRNA synthetase family that includes the related proteins, LeuRS and IleRS. These proteins are large monomeric proteins and play a major role in catalyzing the aminoacylation of tRNA by their cognate amino acid. ValRS joins Val to tRNA(Val) at its synthetic active site. At its CP1 editing active site, ValRS hydrolyzes or deacylates tRNA(Thr) that is incorrectly joined to Val. ValRS forms aggregates with EF-1 (elongation factor 1) and, via this complex, catalyzes the aminoacylation of tRNA and its transfer to EF-1. In addition, ValRS may be regulated by PKC-dependent phosphorylation.

REFERENCES

- Christ, D. and Winter, G. 2003. Identification of functional similarities between proteins using directed evolution. *Proc. Natl. Acad. Sci. USA* 100: 13202-13206.
- 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.
- Fukai, S., et al. 2003. Mechanism of molecular interactions for tRNA(Val) recognition by valyl-tRNA synthetase. *RNA* 9: 100-111.
- Jiang, S., et al. 2005. Three-dimensional reconstruction of the valyl-tRNA synthetase/elongation factor-1H complex and localization of the δ subunit. *FEBS Lett.* 579: 6049-6054.
- Fukunaga, R. and Yokoyama, S. 2005. Structural basis for non-cognate amino acid discrimination by the valyl-tRNA synthetase editing domain. *J. Biol. Chem.* 280: 29937-29945.

CHROMOSOMAL LOCATION

Genetic locus: VARS (human) mapping to 6p21.33; Vars (mouse) mapping to 17 B1.

SOURCE

ValRS (D-7) is a mouse monoclonal antibody raised against amino acids 1-203 mapping at the N-terminus of ValRS of human origin.

PRODUCT

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

ValRS (D-7) is available conjugated to agarose (sc-166674 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-166674 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166674 PE), fluorescein (sc-166674 FITC), Alexa Fluor[®] 488 (sc-166674 AF488), Alexa Fluor[®] 546 (sc-166674 AF546), Alexa Fluor[®] 594 (sc-166674 AF594) or Alexa Fluor[®] 647 (sc-166674 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-166674 AF680) or Alexa Fluor[®] 790 (sc-166674 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

Alexa Fluor[®] is a trademark of Molecular Probes, Inc., Oregon, USA

APPLICATIONS

ValRS (D-7) is recommended for detection of ValRS 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 ValRS siRNA (h): sc-76887, ValRS siRNA (m): sc-76888, ValRS shRNA Plasmid (h): sc-76887-SH, ValRS shRNA Plasmid (m): sc-76888-SH, ValRS shRNA (h) Lentiviral Particles: sc-76887-V and ValRS shRNA (m) Lentiviral Particles: sc-76888-V.

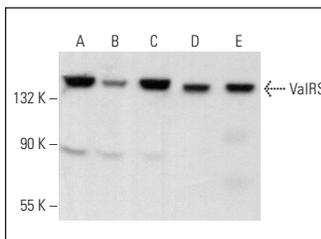
Molecular Weight of ValRS: 140 kDa.

Positive Controls: Raji whole cell lysate: sc-364236, K-562 whole cell lysate: sc-2203 or Hep G2 cell lysate: sc-2227.

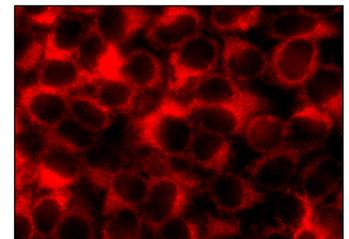
RECOMMENDED SUPPORT REAGENTS

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



ValRS (D-7): sc-166674. Western blot analysis of ValRS expression in K-562 (A), Raji (B), THP-1 (C) and Hep G2 (D) whole cell lysates and rat testis tissue extract (E).



ValRS (D-7): sc-166674. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

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 for detailed protocols and support products.