

IscU1/2 (B-3): sc-271536

BACKGROUND

Iron-sulfur (Fe-S) clusters are cofactors that are essential for a wide variety of processes, including facilitation of electron transfer processes in oxidative phosphorylation, catalysis of enzymatic reactions in aconitase and dehydratases and maintenance of structural integrity in the DNA repair enzyme endonuclease III. In bacteria and eukaryotes, several new genes are implicated in the biogenesis of Fe-S cluster-containing proteins. IscU1 and IscU2, homologs to bacterial IscU and NifU, are iron cluster-assembly proteins. Deletion of either IscU1 or IscU2 results in increased accumulation of iron within the mitochondria, loss of activity of the [4Fe-4S] aconitase enzyme and suppression of oxidative damage in cells lacking cytosolic copper/zinc superoxide dismutase. IscU1 and IscU2 are regulated by the iron status of the cell and localize primarily in the mitochondria. In human cells, alternative splicing of IscU pre-mRNA results in synthesis of these two proteins, which differ at the N-terminus and localize either to the cytosol (IscU1) or the mitochondria (IscU2). IscU proteins interact with IscS, a cysteine desulfurase, to sequester inorganic sulfur for Fe-S cluster assembly. IscU-IscS protein complex localizes in both mitochondria and cytosol, implying that Fe-S cluster assembly takes place in multiple subcellular compartments in mammalian cells.

REFERENCES

1. Beinert, H. and Holm, R.H. 1997. Iron-sulfur clusters: nature's modular, multipurpose structure. *Science* 277: 653-659.
2. Zheng, L., et al. 1998. Assembly of iron-clusters: identification of an iscSUA-hscBA-fox gene cluster from *Azotobacter vinelandii*. *J. Biol. Chem.* 273: 13264-13272.
3. Garland, S.A., et al. 1999. *Saccharomyces cerevisiae* ISU1 and ISU2: members of a well-conserved gene family for iron-sulfur cluster assembly. *J. Mol. Biol.* 294: 897-907.
4. Schilke, B., et al. 1999. Evidence for a conserved system for iron metabolism in the mitochondria of *Saccharomyces cerevisiae*. *Proc. Natl. Acad. Sci. USA* 96: 10206-10211.
5. Tong, W.H. and Rouault, T. 2000. Distinct iron-sulfur cluster assembly complexes exist in the cytosol and mitochondria of human cells. *EMBO J.* 19: 5692-5700.

CHROMOSOMAL LOCATION

Genetic locus: ISCU (human) mapping to 12q23.3; Iscu (mouse) mapping to 5 F.

SOURCE

IscU1/2 (B-3) is a mouse monoclonal antibody raised against amino acids 1-142 representing full length IscU1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} 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

IscU1/2 (B-3) is recommended for detection of IscU1 and IscU2 of human origin and IscU of mouse and rat 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 IscU1/2 siRNA (h): sc-270108, IscU siRNA (m): sc-40712, IscU1/2 shRNA Plasmid (h): sc-270108-SH, IscU shRNA Plasmid (m): sc-40712-SH, IscU1/2 shRNA (h) Lentiviral Particles: sc-270108-V and IscU shRNA (m) Lentiviral Particles: sc-40712-V.

Molecular Weight of IscU1: 15 kDa.

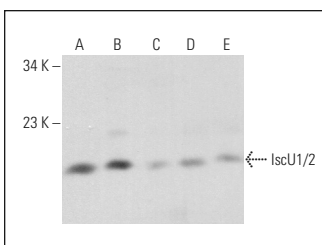
Molecular Weight of IscU2: 18 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, SW480 cell lysate: sc-2219 or HCT-116 whole cell lysate: sc-364175.

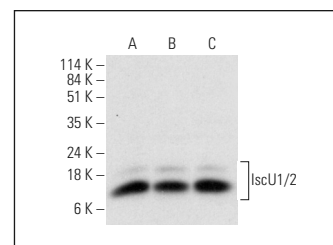
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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



IscU1/2 (B-3): sc-271536. Western blot analysis of IscU1/2 expression in HeLa (A), 3T3-L1 (B), M1 (C), L6 (D) and A-10 (E) whole cell lysates.



IscU1/2 (B-3): sc-271536. Western blot analysis of IscU1/2 expression in HeLa (A), HCT-116 (B) and SW480 (C) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Hu, H., et al. 2017. MitokATP channels promote the proliferation of hypoxic human pulmonary artery smooth muscle cells via the ROS/HIF/miR-210/IscU signaling pathway. *Exp. Ther. Med.* 14: 6105-6112.

STORAGE

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