SANTA CRUZ BIOTECHNOLOGY, INC.

Tim23 (H-8): sc-514463

BACKGROUND

Translocation of nuclear encoded preproteins into the mitochondrial matrix requires the coordinated action of the translocases Tom and Tim, which are located in the outer mitochondrial membrane and the inner membrane, respectively. The mitochondrial preprotein translocases of the outer membrane (Tom) is a multi-subunit protein that contains at least eight proteins: four import receptor subunits (Tom70, Tom37, Tom22, and Tom20), three small proteins (Tom7, Tom6, and Tom5), and a structural component of the outer membrane channel (Tom40). The Tom machinery involves the import receptors, which initiate the binding of cytosolically synthesized preproteins to the outer membrane, and a general import pore (GIP), which promotes the translocation of various preproteins into the mitochondria. The Tim channel imports nuclear-encoded mitochondrial preproteins, and it involves three proteins, Tim17, Tim23 and Tim44, which are represented at equimolar ratios. Tim17 is expressed as two isoforms, Tim17A and Tim17B, which differ only in their C-terminal sequences, and like Tim23, these proteins are ubiquitously expressed in fetal and adult tissues. Tim17 and Tim23 are integral membrane proteins that comprise the structural elements of the inner membrane channel by which the preproteins are transferred. The Tim44, on the other hand, is a largely hydrophilic protein that recruits the matrix located HSP 70 to the site where the preprotein emerges from the Tim channel.

PROTOCOLS

1. Neupert, W. 1997. Protein import into mitochondria. Annu. Rev. Biochem. 66: 863-917.
2. Yano, M., et al. 1998. Functional analysis of human mitochondrial receptor Tom20 for protein import into mitochondria. J. Biol. Chem. 273: 26844-26851.

CHROMOSOMAL LOCATION

Genetic locus: TIMM23 (human) mapping to 10q11.23; Timm23 (mouse) mapping to 14 B.

SOURCE

Tim23 (H-8) is a mouse monoclonal antibody raised against amino acids 31-209 mapping at the C-terminus of Tim23 of human origin.

PRODUCT

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

Tim23 (H-8) is available conjugated to agarose (sc-514463 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-514463 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-514463 PE), fluorescein (sc-514463 FITC), Alexa Fluor® 488 (sc-514463 AF488), Alexa Fluor® 546 (sc-514463 AF546), Alexa Fluor® 594 (sc-514463 AF594) or Alexa Fluor® 647 (sc-514463 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-514463 AF680) or Alexa Fluor® 790 (sc-514463 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

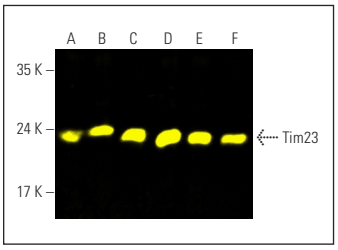
APPLICATIONS

Tim23 (H-8) is recommended for detection of Tim23 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).

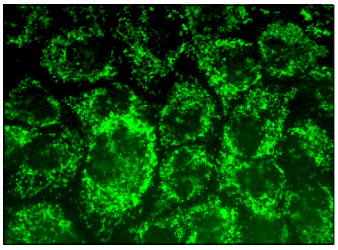
Suitable for use as control antibody for Tim23 siRNA (h): sc-44155, Tim23 siRNA (m): sc-155972, Tim23 shRNA Plasmid (h): sc-44155-SH, Tim23 shRNA Plasmid (m): sc-155972-SH, Tim23 shRNA (h) Lentiviral Particles: sc-44155-V and Tim23 shRNA (m) Lentiviral Particles: sc-155972-V.

Positive Controls: MCF7 whole cell lysate: sc-2206, IMR-32 cell lysate: sc-2409 or A549 cell lysate: sc-2413.

DATA



Tim23 (H-8) Alexa Fluor® 488: sc-514463 AF488. Direct fluorescent western blot analysis of Tim23 expression in MCF7 (**A**), IMR-32 (**B**), A549 (**C**), PC-12 (**D**), NIH/3T3 (**E**) and A-431 (**F**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214.



Tim23 (H-8): sc-514463. Immunofluorescence staining of formalin-fixed A-431 cells showing mitochondrial localization.

SELECT PRODUCT CITATIONS

1. Cheng, B., et al. 2015. BECN1s, a short splice variant of BECN1, functions in mitophagy. Autophagy 11: 2048-2056.
2. Gao, Y., et al. 2019. Mitochondrial metabolism is inhibited by the HIF1α-MYC-PGC-1β axis in BRAF V600E thyroid cancer. FEBS J. 286: 1420-1436.
3. Liu, X., et al. 2020. The lysosomal membrane protein LAMP-2 is dispensable for PINK1/Parkin-mediated mitophagy. FEBS Lett. 594: 823-840.
4. Haschler, T.N., et al. 2021. Sirtuin 5 depletion impairs mitochondrial function in human proximal tubular epithelial cells. Sci. Rep. 11: 15510.
5. Li, H., et al. 2022. Tubular β-catenin alleviates mitochondrial dysfunction and cell death in acute kidney injury. Cell Death Dis. 13: 1061.
6. Ganji, R., et al. 2023. The p97-UBXD8 complex regulates ER-Mitochondria contact sites by altering membrane lipid saturation and composition. Nat. Commun. 14: 638.

STORAGE

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