SANTA CRUZ BIOTECHNOLOGY, INC.

Mfn1 (D-10): sc-166644

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Mitofusin 1 (Mfn1) and mitofusin 2 (Mfn2) are homologs for the *Drosphila* protein fuzzy onion (Fzo). They are mitochondrial membrane proteins and are mediators of mitochondrial fusion. A GTPase domain is required for Mfn protein function but the molecular mechanisms of the GTPase-dependent reaction as well as the functional division of the two Mfn proteins are unknown. They are essential for embryonic development and may play a role in the pathobiology of obesity. Although the Mfn1 and Mfn2 genes are broadly expressed, they show different levels of expression in different tissues. Two Mfn1 transcripts are elevated in heart, while Mfn2 mRNA is abundantly expressed in heart and muscle tissue but present only at low levels in many other tissues. Mfn1 localizes to mitochondria and participates in at least two different high molecular weight protein complexes in a GTP-dependent manner. Purified recombinant Mfn1 exhibited approximately eightfold higher GTPase activity than Mfn2.

CHROMOSOMAL LOCATION

Genetic locus: MFN1 (human) mapping to 3q26.33; Mfn1 (mouse) mapping to 3 A3.

SOURCE

Mfn1 (D-10) is a mouse monoclonal antibody raised against amino acids 10-74 mapping within an N-terminal cytoplasmic domain of Mfn1 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.

Mfn1 (D-10) is available conjugated to agarose (sc-166644 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-166644 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166644 PE), fluorescein (sc-166644 FITC), Alexa Fluor® 488 (sc-166644 AF488), Alexa Fluor® 546 (sc-166644 AF546), Alexa Fluor® 594 (sc-166644 AF594) or Alexa Fluor® 647 (sc-166644 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166644 AF680) or Alexa Fluor® 790 (sc-166644 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

Mfn1 (D-10) is recommended for detection of Mitofusin 1 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).

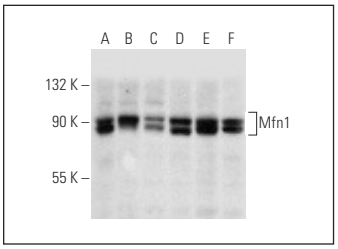
Suitable for use as control antibody for Mfn1 siRNA (h): sc-43927, Mfn1 siRNA (m): sc-60082, Mfn1 siRNA (r): sc-270320, Mfn1 shRNA Plasmid (h): sc-43927-SH, Mfn1 shRNA Plasmid (m): sc-60082-SH, Mfn1 shRNA Plasmid (r): sc-270320-SH, Mfn1 shRNA (h) Lentiviral Particles: sc-43927-V, Mfn1 shRNA (m) Lentiviral Particles: sc-60082-V and Mfn1 shRNA (r) Lentiviral Particles: sc-270320-V.

Molecular Weight of Mfn1: 86 kDa.

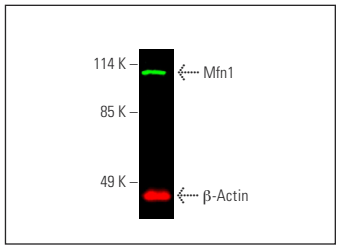
STORAGE

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

DATA



Mfn1 (D-10): sc-166644. Western blot analysis of Mfn1 expression in HeLa (**A**), Caki-1 (**B**), SK-MEL-28 (**C**), PC-3 (**D**), K-562 (**E**) and NIH/3T3 (**F**) whole cell lysates.



Simultaneous direct near-infrared western blot analysis of Mfn1 expression, detected with Mfn1 (D-10) Alexa Fluor® 680: sc-166644 AF680 and β-Actin expression, detected with β-Actin (C4) Alexa Fluor® 790: sc-47778 AF790 in Caki-1 whole cell lysate. Blocked with UltraCruz® Blocking Reagent: sc-516214.

SELECT PRODUCT CITATIONS

1. Nantajit, D., et al. 2010. Cyclin B1/Cdk1 phosphorylation of mitochondrial p53 induces anti-apoptotic response. PLoS ONE 5: e12341.
2. Zou, J., et al. 2014. Autophagy inhibitor LRPPRC suppresses mitophagy through interaction with mitophagy initiator Parkin. PloS ONE 9: e94903.
3. Suzuki-Karasaki, Y., et al. 2015. Distinct effects of TRAIL on the mitochondrial network in human cancer cells and normal cells: role of plasma membrane depolarization. Oncotarget 6: 21572-21588.
4. Hull, T.D., et al. 2016. Heme oxygenase-1 regulates mitochondrial quality control in the heart. JCI Insight 1: e85817.
5. Zhou, X., et al. 2017. Impaired mitochondrial fusion, autophagy, biogenesis and dysregulated lipid metabolism is associated with preeclampsia. Exp. Cell Res. 359: 195-204.
6. Jin, X., et al. 2018. Different mitochondrial fragmentation after irradiation with X-rays and carbon ions in HeLa cells and its influence on cellular apoptosis. Biochem. Biophys. Res. Commun. 500: 958-965.
7. Tuncay, E., et al. 2019. Zn^{2+}-transporters ZIP7 and ZnT7 play important role in progression of cardiac dysfunction via affecting sarco(endo)plasmic reticulum-mitochondria coupling in hyperglycemic cardiomyocytes. Mitochondrion 44: 41-52.
8. Li, J., et al. 2020. p53/PGC-1α-mediated mitochondrial dysfunction promotes PC3 prostate cancer cell apoptosis. Mol. Med. Rep. 22: 155-164.
9. Rossi, A., et al. 2021. Calcium signaling and mitochondrial function in presenilin 2 knock-out mice: looking for any loss-of-function phenotype related to Alzheimer's disease. Cells 10: 204.

RESEARCH USE

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