SANTA CRUZ BIOTECHNOLOGY, INC.

mtTFA (F-6): sc-166965

The Power to Question

BACKGROUND

mtTFA (mitochondrial transcription factor A), also known as mtTF1, TFAM, TCF6 (for transcription factor 6-like1), TCF6L2 and tsHMG, is a nuclear-encoded gene product that is imported into the mitochondria. mtTFA is required for many aspects of mitochondrial biogenesis including the replication and transcription of mitochondrial DNA (mtDNA). In mouse, testis-specific mtTFA is missing the mitochondria targeting sequence and is present in the nucleus rather than the mitochondria. This form of mtTFA is located primarily in the nuclei of elongated spermatids and may be involved in the regulation of gene expression of the haploid male genome. During mouse and human spermatogenesis there is a reduction of mtTFA protein levels and a reduction in mtDNA copy number. These features may provide one of the mechanisms by which paternal mtDNA transmission is prevented. mtTFA has been associated with mitochondrial disorder in humans characterized by ocular myopathy, exercise intolerance and muscle wasting.

CHROMOSOMAL LOCATION

Genetic locus: TFAM (human) mapping to 10q21.1; Tfam (mouse) mapping to 10 B5.3.

SOURCE

mtTFA (F-6) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 190-215 within an internal region of mtTFA of mouse 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. Also available as TransCruz reagent for Gel Supershift and ChIP applications, sc-166965 X, 200 µg/0.1 ml.

mtTFA (F-6) is available conjugated to agarose (sc-166965 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-166965 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166965 PE), fluorescein (sc-166965 FITC), Alexa Fluor® 488 (sc-166965 AF488), Alexa Fluor® 546 (sc-166965 AF546), Alexa Fluor® 594 (sc-166965 AF594) or Alexa Fluor® 647 (sc-166965 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166965 AF680) or Alexa Fluor® 790 (sc-166965 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-166965 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

APPLICATIONS

mtTFA (F-6) is recommended for detection of mtTFA 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).

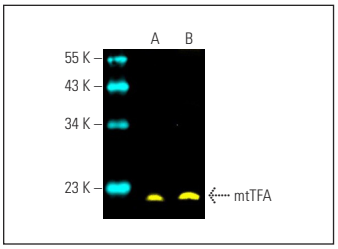
Suitable for use as control antibody for mtTFA siRNA (h): sc-38053, mtTFA siRNA (m): sc-45912, mtTFA siRNA (r): sc-156067, mtTFA shRNA Plasmid (h): sc-38053-SH, mtTFA shRNA Plasmid (m): sc-45912-SH, mtTFA shRNA Plasmid (r): sc-156067-SH, mtTFA shRNA (h) Lentiviral Particles: sc-38053-V, mtTFA shRNA (m) Lentiviral Particles: sc-45912-V and mtTFA shRNA (r) Lentiviral Particles: sc-156067-V.

mtTFA (F-6) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

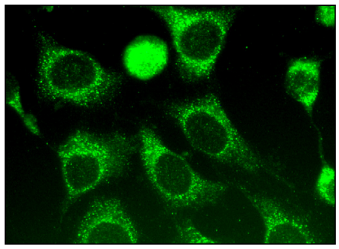
Molecular Weight of mtTFA: 25 kDa.

Positive Controls: A-673 cell lysate: sc-2414.

DATA



mtTFA (F-6) Alexa Fluor® 488: sc-166965 AF488. Direct fluorescent western blot analysis of mtTFA expression in RAW 264.7 (**A**) and A-673 (**B**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Cruz Marker™ Molecular Weight Standards detected with Cruz Marker MW Tag-Alexa Fluor® 647: sc-516791.



mtTFA (F-6): sc-166965. Immunofluorescence staining of methanol-fixed NIH/3T3 cells showing either cytoplasmic or nuclear localization.

SELECT PRODUCT CITATIONS

1. Zhang, H., et al. 2013. Protective effect of demethylation treatment on cigarette smoke extract-induced mouse emphysema model. J. Pharmacol. Sci. 123: 159-166.
2. Chen, J., et al. 2017. Ursolic acid induces mitochondrial biogenesis through the activation of AMPK and PGC-1 in C2C12 myotubes: a possible mechanism underlying its beneficial effect on exercise endurance. Food Funct. 8: 2425-2436.
3. Yang, M., et al. 2018. TFAM is a novel mediator of immunogenic cancer cell death. Oncoimmunology 7: e1431086.
4. Di Emidio, G., et al. 2019. SIRT1 participates in the response to methylglyoxal-dependent glycative stress in mouse oocytes and ovary. Biochim. Biophys. Acta Mol. Basis Dis. 1865: 1389-1401.

RESEARCH USE

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