SANTA CRUZ BIOTECHNOLOGY, INC.

MITF (SPM290): sc-56433

BACKGROUND

MITF (microphthalmia-associated transcription factor) is a melanocytic nuclear protein that contains basic helix-loop-helix (HLH) and leucine zipper (LZ) domains. These protein motifs are frequently observed in other transcription factors and are particularly common to members of the Myc family. MITF can directly associate with DNA as a homodimer. It is required for the development and differentiation of melanocytes. Its expression is upregulated by cAMP and cAMP dependent pathways. MITF activates several differenct gene promoters by binding to their E-boxes. Tyrosinase, TRP-1 and TRP-2 are pigment synthesis genes activated by MITF. When MITF is phosphorylated on Serine 73 (via the MAPK pathway), it associates with coactivators of the p300/CBP family and enhances transcription. MITF has several isoforms including MITF-M, which is specifically expressed in melanocytes. In MITF-deficient mice there is a complete absence of melanocytes.

REFERENCES

1. Beckmann, H., et al. 1990. TFE3: a helix-loop-helix protein that activates transcription through the immunoglobulin enhancer μE3 motif. Genes Dev. 4: 167-179.
2. Fisher, D.E., et al. 1991. TFEB has DNA-binding and oligomerization properties of a unique helix-loop-helix/leucine-zipper family. Genes Dev. 5: 2342-2352.
3. Kerkhoff, E., et al. 1991. Sequence-specific DNA binding by Myc proteins. Proc. Natl. Acad. Sci. USA 88: 4323-4327.
4. Artandi, S.E., et al. 1994. The basic helix-loop-helix-zipper domain of TFE3 mediates enhancer-promoter interaction. Mol. Cell. Biol. 14: 7704-7716.
5. Yasumoto, K., et al. 1997. Molecular cloning of cDNA encoding a human TFEC isoform, a newly identified transcriptional regulator. Biochim. Biophys. Acta 1353: 23-31.
6. Steingrimsson, E., et al. 1998. The bHLH-Zip transcription factor TFEB is essential for placental vascularization. Development 125: 4607-4616.
7. King, R., et al. 1999. Microphthalmia transcription factor. A sensitive and specific melanocyte marker for melanoma diagnosis. Am. J. Pathol. 155: 731-738.
8. Park, H.Y., et al. 2006. MITF mediates cAMP-induced protein kinase C-β expression in human melanocytes. Biochem. J. 395: 571-578
9. Vachtenheim, J., et al. 2007. Inhibition of MITF transcriptional activity independent of targeting p300/CBP coactivators. Pigment Cell Res. 20: 41-51.

CHROMOSOMAL LOCATION

Genetic locus: MITF (human) mapping to 3p14.2-p14.1; Mitf (mouse) mapping to 6 D3.

SOURCE

MITF (SPM290) is a mouse monoclonal antibody raised against an N-terminal fragment of MITF protein of human origin.

PRODUCT

Each vial contains 50 µg IgG_1 in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

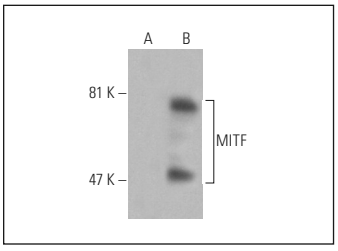
MITF (SPM290) is recommended for detection of MITF of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for MITF siRNA (h): sc-35934, MITF siRNA (m): sc-35935, MITF shRNA Plasmid (h): sc-35934-SH, MITF shRNA Plasmid (m): sc-35935-SH, MITF shRNA (h) Lentiviral Particles: sc-35934-V and MITF shRNA (m) Lentiviral Particles: sc-35935-V.

Molecular Weight of MITF: 60 kDa.

Positive Controls: MITF (h3): 293T Lysate : sc-114536, C32 nuclear extract: sc-2136 or NIH/3T3 nuclear extract: sc-2138.

DATA



MITF (SPM290): sc-56433. Western blot analysis of MITF expression in non-transfected: sc-117752 (**A**) and human MITF transfected: sc-114536 (**B**) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Böttcher-Haberzeth, S., et al. 2014. Tissue engineering of skin: human tonsil-derived mesenchymal cells can function as dermal fibroblasts. Pediatr. Surg. Int. 30: 213-222.
2. Lee, D.H., et al. 2018. Downregulation of α-melanocyte-stimulating hormone-induced activation of the Pax3-MITF-tyrosinase axis by sorghum ethanolic extract in B16F10 melanoma cells. Int. J. Mol. Sci. 19 pii: E1640.

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.