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TBX21 Antibody

Catalog # ASC11699

Product Information

Application	WB, IF, E
Primary Accession	Q9UL17
Other Accession	NP_037483, 7019549
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	58328
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	TBX21 antibody can be used for detection of TBX21 by Western blot at 1 - 2 g/ml.

Additional Information

Gene ID	30009
Other Names	T-box transcription factor TBX21, T-box protein 21, T-cell-specific T-box transcription factor T-bet, Transcription factor TBLYM, TBX21, TBET, TBLYM
Target/Specificity	TBX21; TBX21 antibody is human and mouse reactive.
Reconstitution & Storage	TBX21 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year.
Precautions	TBX21 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	TBX21
Synonyms	TBET, TBLYM
Function	Lineage-defining transcription factor which initiates Th1 lineage development from naive Th precursor cells both by activating Th1 genetic programs and by repressing the opposing Th2 and Th17 genetic programs (PubMed:10761931). Activates transcription of a set of genes important for Th1 cell function, including those encoding IFN- gamma and the chemokine receptor CXCR3. Induces permissive chromatin accessibilty and CpG methylation in IFNG (PubMed:33296702). Activates IFNG and CXCR3 genes in part by recruiting chromatin remodeling complexes including KDM6B, a SMARCA4-containing SWI/SNF-complex, and an H3K4me2-methyltransferase complex to their promoters and all of these complexes serve to establish a

more permissive chromatin state conducive with transcriptional activation (By similarity). Can activate Th1 genes also via recruitment of Mediator complex and P-TEFb (composed of CDK9 and CCNT1/cyclin-T1) in the form of the super elongation complex (SEC) to super-enhancers and associated genes in activated Th1 cells (PubMed:27292648). Inhibits the Th17 cell lineage commitment by blocking RUNX1-mediated transactivation of Th17 cell-specific transcriptinal regulator RORC. Inhibits the Th2 cell lineage commitment by suppressing the production of Th2 cytokines, such as IL-4, IL-5, and IL- 13, via repression of transcriptional regulators GATA3 and NFATC2. Protects Th1 cells from amplifying aberrant type-I IFN response in an IFN-gamma abundant microenvironment by acting as a repressor of type-I IFN transcription factors and type-I IFN-stimulated genes. Acts as a regulator of antiviral B-cell responses; controls chronic viral infection by promoting the antiviral antibody IgG2a isotype switching and via regulation of a broad antiviral gene expression program (By similarity). Required for the correct development of natural killer (NK) and mucosal-associated invariant T (MAIT) cells (PubMed:33296702).

Cellular Location Nucleus

Tissue Location T-cell specific..

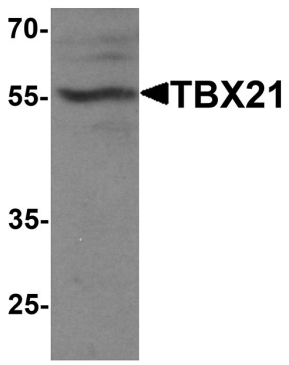
Background

TBX21 is a member of a phylogenetically conserved family of genes that share a common DNA-binding domain, the T-box (1,2). Members of this family include transcription factors involved in the regulation of developmental processes (2). Studies in mouse and humans show that TBX21 is a Th1 cell-specific transcription factor that controls the expression of the hallmark Th1 cytokine, interferon-gamma (1,3). Expression of the human ortholog also correlates with interferon-gamma expression in Th1 and natural killer cells, suggesting a TBX21 may play a role in initiating Th1 lineage development from naive Th precursor cells. (3).

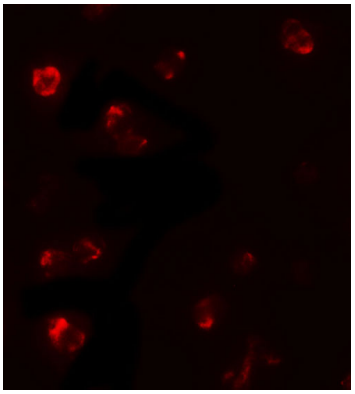
References

Szabo SJ, Kim ST, Costa GL, et al. A novel transcription factor, T-bet, directs Th1 lineage commitment. Cell 2000; 100:655-69.
Naiche LA, Harrelson Z, Kelly RG, et al. T-box genes in vertebrate development. Annu. Rev. Genet. 2005; 39:219-39.
Hibbert L, Pflanz S, De Waal Malefyt R, et al. IL-27 and IFN-alpha signal via Stat1 and Stat3 and induce T-Bet and IL-12Rbeta2 in naive T cells. J. Interfeon Cytokine Res. 2003; 23:513-22.

Images



Western blot analysis of TBX21 in 293 cell lysate with TBX21 antibody at 1 µg/ml.



Immunofluorescence of TBX21 in 293 cells with TBX21 antibody at 5 µg/mL.