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PRDM16 Antibody

Catalog # ASC11042

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	Q9HAZ2
Other Accession	CAH71530, 55665817
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	140251
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	PRDM16 antibody can be used for detection of PRDM16 by Western blot at 1 - 2 g/mL. Antibody can also be used for immunohistochemistry starting at 2.5 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	63976
Other Names	PR domain zinc finger protein 16, PR domain-containing protein 16, Transcription factor MEL1, MDS1/EVI1-like gene 1, PRDM16, KIAA1675, MEL1, PFM13
Target/Specificity	PRDM16;
Reconstitution & Storage	PRDM16 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	PRDM16 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	PRDM16 {ECO:0000303|PubMed:22939622, ECO:0000312|HGNC:HGNC:14000}
Function	Transcription regulator that acts both as a histone methyltransferase or chromatin adapter, depending on the context (PubMed:12816872). In the cytoplasm, acts as a histone methyltransferase, which catalyzes monomethylation of 'Lys-9' of free histone H3 (H3K9me1) during translation (By similarity). Monomethylated histone H3 is then transported to the nucleus and incorporated into nucleosomes where SUV39H methyltransferases (SUV39H1 and SUV39H2) use it as a substrate to catalyze histone H3 'Lys-9'

	trimethylation (H3K9me3) (By similarity). Probably one of the primary histone methyltransferases along with MECOM/PRDM3 that direct cytoplasmic H3K9me1 methylation (By similarity). In the nucleus, acts as a key chromatin adapter that mediates differentiation of brown and beige adipocytes, which are specialized in dissipating chemical energy in the form of heat in response to cold or excess feeding (By similarity). Following recruitment to chromatin by PPARG nuclear receptor, promotes differentiation of myoblastic precursors into brown adipose cells (By similarity). Mechanistically, acts by mediating recruitment of (1) EHMT1 histone methyltransferase, thereby inhibiting the expression of white adipose-selective genes or (2) mediator complex, activating genes that are highly expressed in brown adipocytes, such as UCP1, PPARA, and PPARGC1A (By similarity). Also mediates differentiation of beige adipocytes from white adipose cells following recruitment by PPARG (By similarity). In addition to adipocyte differentiation, also involved in tolerance to gut microbiota: following recruitment to chromatin by RORgammaT (RORC) in a subset of antigen-presenting cells, promotes differentiation of peripherally-induced regulatory T-cells (pTreg), which suppress inflammatory responses to commensal microorganisms (By similarity). Also required in adult heart to preserve mitochondrial function and inhibit hypertrophy with advanced age (By similarity). Functions as a repressor of TGF-beta signaling (PubMed:19049980).
Cellular Location	Nucleus. Chromosome {ECO:0000250|UniProtKB:A2A935}. Cytoplasm
Tissue Location	Expressed in uterus and kidney. Expressed in both cardiomyocytes and interstitial cells.

Background

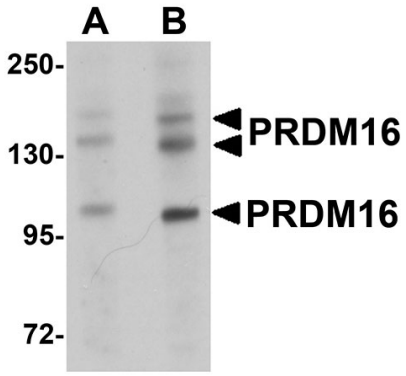
PRDM16 Antibody: PRDM16 is a zinc finger transcription factor and contains an N-terminal PR domain. The reciprocal translocation t(1;3)(p36;q21) occurs in a subset of myelodysplastic syndrome (MDS) and acute myeloid leukemia (AML). This gene is located near the 1p36.3 breakpoint and has been shown to be specifically expressed in the t(1:3)(p36, q21)-positive MDS/AML. The translocation results in the overexpression of a truncated version of this protein that lacks the PR domain, which may play an important role in the pathogenesis of MDS and AML. Recent studies have shown that PRDM16 normally acts as a Smad3 binding protein that may be important for the development of orofacial structures through modulation of the TGF-beta signaling pathway. Other experiments have indicated that PRDM16 controls a bidirectional cell fate switch between skeletal myoblasts and brown fat cells.

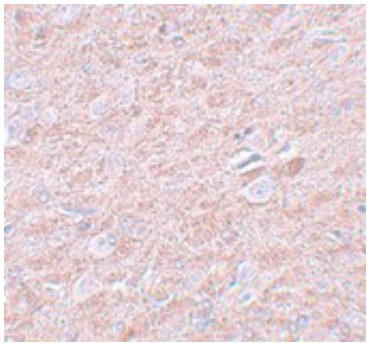
References

Mochizuki N, Shimizu S, Nagasawa T, et al. A novel gene, MEL1, mapped to 1p36.3 is highly homologous to the MDS1/EVI1 gene and is transcriptionally activated in t(1;3)(p36;q21)-positive leukemia cells. Blood2000; 96:3209-14.
Morishita K. Leukemogenesis of the EVI1/MEL1 gene family. Int. J. Hematol.2007; 85:279-86.
Warner DR, Horn KH, Mudd L, et al. PRDM16/MEL1: a novel Smad binding protein expressed in murine embryonic orofacial tissue. Biochim. Biophys. Acta2007; 1773:814-20.
Seale P, Bjork B, Yang W, et al. PRDM16 controls a brown fat/skeletal muscle switch. Nature2008; 454:961-7.

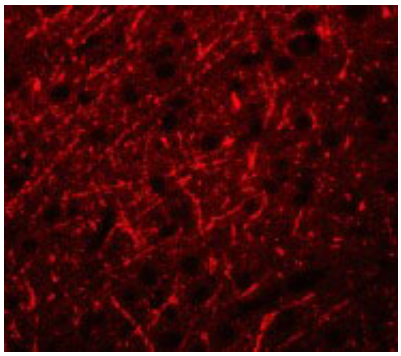
Images

Western blot analysis of PRDM16 in rat brain tissue lysate with PRDM16 antibody at (A) 1 and (B) 2 µg/mL.





Immunohistochemistry of PRDM16 in rat brain tissue with PRDM16 antibody at 2.5 µg/mL.



Immunofluorescence of PRDM16 in Human Brain cells with PRDM16 antibody at 20 µg/mL.

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