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SATB1 Antibody

Catalog # ASC10705

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	Q01826
Other Accession	Q01826, 417747
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	85957
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	SATB1 antibody can be used for detection of SATB1 by Western blot at 2 - 4 g/mL. Antibody can also be used for immunohistochemistry starting at 5 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	6304
Other Names	DNA-binding protein SATB1, Special AT-rich sequence-binding protein 1, SATB1
Target/Specificity	SATB1;
Reconstitution & Storage	SATB1 antibody can be stored at 4°C for three months and -20°C, 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	SATB1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	SATB1 (HGNC:10541)
Function	Crucial silencing factor contributing to the initiation of X inactivation mediated by Xist RNA that occurs during embryogenesis and in lymphoma (By similarity). Binds to DNA at special AT-rich sequences, the consensus SATB1-binding sequence (CSBS), at nuclear matrix- or scaffold-associated regions. Thought to recognize the sugar-phosphate structure of double-stranded DNA. Transcriptional repressor controlling nuclear and viral gene expression in a phosphorylated and acetylated status-dependent manner, by binding to matrix attachment regions (MARs) of DNA and inducing a local chromatin-loop remodeling. Acts as a docking site for several

	chromatin remodeling enzymes (e.g. PML at the MHC-I locus) and also by recruiting corepressors (HDACs) or coactivators (HATs) directly to promoters and enhancers. Modulates genes that are essential in the maturation of the immune T-cell CD8SP from thymocytes. Required for the switching of fetal globin species, and beta- and gamma-globin genes regulation during erythroid differentiation. Plays a role in chromatin organization and nuclear architecture during apoptosis. Interacts with the unique region (UR) of cytomegalovirus (CMV). Alu-like motifs and SATB1-binding sites provide a unique chromatin context which seems preferentially targeted by the HIV-1 integration machinery. Moreover, HIV-1 Tat may overcome SATB1- mediated repression of IL2 and IL2RA (interleukin) in T-cells by binding to the same domain as HDAC1. Delineates specific epigenetic modifications at target gene loci, directly up-regulating metastasis- associated genes while down-regulating tumor-suppressor genes. Reprograms chromatin organization and the transcription profiles of breast tumors to promote growth and metastasis. Promotes neuronal differentiation of neural stem/progenitor cells in the adult subventricular zone, possibly by positively regulating the expression of NEUROD1 (By similarity).
Cellular Location	Nucleus matrix. Nucleus, PML body. Note=Organized into a cage-like network anchoring loops of heterochromatin and tethering specialized DNA sequences (PubMed:12692553). When sumoylated, localized in promyelocytic leukemia nuclear bodies (PML NBs) (PubMed:18408014)
Tissue Location	Expressed predominantly in thymus.

Background

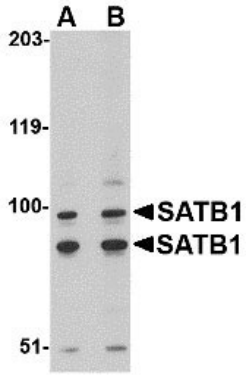
SATB1 Antibody: Human special AT-rich sequence-binding protein-1 (SATB1) is a nuclear matrix/scaffold-associated region DNA-binding protein, predominantly expressed in the thymus and pre-B cells. Like its homolog SATB2, SATB1 selectively binds double-stranded, special AT-rich DNA sequences in which one strand exclusively consists of well-mixed A, T, and C nucleotides. SATB1 contains a dimerization domain that shares similarity with the PDZ motif, identified as an indispensable element for high-affinity binding of SATB1 to DNA. SATB1 constitutes a functional nuclear architecture that has a 'cage-like' protein distribution surrounding heterochromatin and regulates gene expression through chromatin remodeling/HDAC (histone deacetylase complex) and transcription factors recruitment. SATB1 functions as a 'genome organizer' essential for proper T-cell development. Recent studies show that SATB1 is necessary for breast cancer cells to become metastatic, and when ectopically expressed in non-metastatic cells, can induce invasive activity in vivo. At least two isoforms of SATB1 are known to exist.

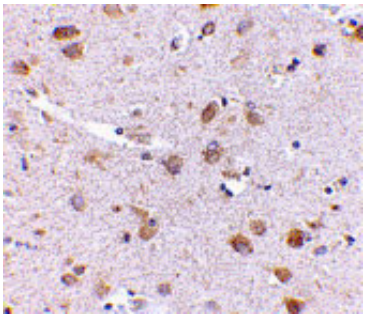
References

Dickinson LA and Kohwi-Shigematsu T. Nucleolin is a matrix attachment region DNA-binding protein that specifically recognizes a region with high base-unpairing potential. Mol. Cell. Biol.1995; 15:456-65.
Szemes M, Gyorgy A, Pawaletz C, et al. Isolation and characterization of SATB2, a novel AT-rich DNA binding protein expressed in development- and cell-specific manner in the rat brain. Neurochem. Res.2006; 31:237-46.
Purbey PK, Singh S, Kumar PP, et al. PDZ domain-mediated dimerization and homeodomain-directed specificity are required for high-affinity DNA binding by SATB1. Nucleic Acids Res.2008; 36:2107-22.
Cai S, Han HJ and Kohwi-Shigematsu T. Tissue-specific nuclear architecture and gene expression regulated by SATB1. Nat. Genet.2003; 34:42-50.

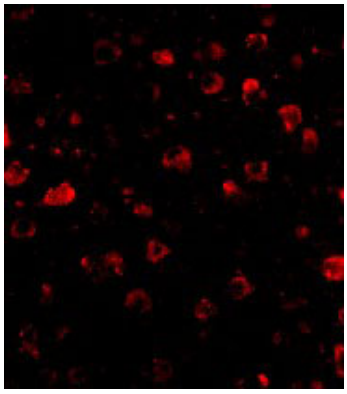
Images

Western blot analysis of SATB1 in A20 cell lysate with SATB1 antibody at (A) 2 and (B) 4 µg/mL.





Immunohistochemistry of SATB1 in human brain with SATB1 antibody at 5 µg/mL.



Immunofluorescence of SATB1 in Human Brain cells with SATB1 antibody at 20 µg/mL.

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