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TIP60 Antibody

Purified Mouse Monoclonal Antibody
Catalog # AO1114a

Product Information

Application	WB, IHC, E
Primary Accession	Q92993
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Clone Names	3F9
Isotype	IgG2b
Calculated MW	58582
Description	HTATIP (HIV-1 Tat interacting protein TIP60, about 60kDa) belongs to the MYST family of histone acetyl transferases (HATs) and was originally isolated as an HIV-1 TAT-interactive protein. HATs play important roles in regulating chromatin remodeling, transcription and other nuclear processes by acetylating histone and nonhistone proteins. The nucleosome, made up of four core histone proteins (H2A, H2B, H3 and H4), is the primary building block of chromatin. In addition to the growing number of post-translational histone modifications regulating chromatin structure, cells can also exchange canonical histones with variant histones that can directly or indirectly modulate chromatin structure. There are five major variants of histone H2A: canonical H2A (most abundant), H2A.X, MacroH2A, H2ABbd and H2A.Z. Histone H2A.Z, the most conserved variant across species, functions as both a positive and negative regulator of transcription and is important for chromosome stability. Several homologous protein complexes, such as SWR-C, TIP60 and SRCAP (mammals), have been shown to catalyze the ATP-dependent exchange of H2A.Z for H2A in the nucleosome. This protein is a histone acetylase that has a role in DNA repair and apoptosis and is thought to play an important role in signal transduction.
Immunogen	Purified recombinant fragment of human TIP60 expressed in E. Coli.
Formulation	Ascitic fluid containing 0.03% sodium azide.

Additional Information

Gene ID	10524
Other Names	Histone acetyltransferase KAT5, 2.3.1.48, 60 kDa Tat-interactive protein, Tip60, Histone acetyltransferase HTATIP, HIV-1 Tat interactive protein, Lysine acetyltransferase 5, cPLA(2)-interacting protein, KAT5, HTATIP, TIP60
Dilution	WB~~1/500 - 1/2000 IHC~~1/200 - 1/1000 E~~N/A
Storage	Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store

at -20°C in small aliquots to prevent freeze-thaw cycles.

Precautions TIP60 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name KAT5 {ECO:0000303|PubMed:32817552, ECO:0000312|HGNC:HGNC:5275}

Function Catalytic subunit of the NuA4 histone acetyltransferase complex, a multiprotein complex involved in transcriptional activation of select genes principally by acetylation of nucleosomal histones H2A and H4 (PubMed:12776177, PubMed:14966270, PubMed:15042092, PubMed:15121871, PubMed:15310756, PubMed:16387653, PubMed:19909775, PubMed:25865756, PubMed:27153538, PubMed:29174981, PubMed:29335245, PubMed:32822602, PubMed:33076429). Histone acetylation alters nucleosome-DNA interactions and promotes interaction of the modified histones with other proteins which positively regulate transcription (PubMed:12776177, PubMed:14966270, PubMed:15042092, PubMed:15121871, PubMed:15310756). The NuA4 histone acetyltransferase complex is required for the activation of transcriptional programs associated with proto-oncogene mediated growth induction, tumor suppressor mediated growth arrest and replicative senescence, apoptosis, and DNA repair (PubMed:17709392, PubMed:19783983, PubMed:32832608). The NuA4 complex plays a direct role in repair of DNA double-strand breaks (DSBs) by promoting homologous recombination (HR): the complex inhibits TP53BP1 binding to chromatin via MBTD1, which recognizes and binds histone H4 trimethylated at 'Lys-20' (H4K20me), and KAT5 that catalyzes acetylation of 'Lys-15' of histone H2A (H2AK15ac), thereby blocking the ubiquitination mark required for TP53BP1 localization at DNA breaks (PubMed:27153538, PubMed:32832608). Also involved in DSB repair by mediating acetylation of 'Lys-5' of histone H2AX (H2AXK5ac), promoting NBN/NBS1 assembly at the sites of DNA damage (PubMed:17709392, PubMed:26438602). The NuA4 complex plays a key role in hematopoietic stem cell maintenance and is required to maintain acetylated H2A.Z/H2AZ1 at MYC target genes (By similarity). The NuA4 complex is also required for spermatid development by promoting acetylation of histones: histone hyperacetylation is required for histone replacement during the transition from round to elongating spermatids (By similarity). Component of a SWR1-like complex that specifically mediates the removal of histone H2A.Z/H2AZ1 from the nucleosome (PubMed:24463511). Also acetylates non-histone proteins, such as BMAL1, ATM, AURKB, CHKA, CGAS, ERCC4/XPF, LPIN1, TP53/p53, NDC80/HEC1, NR1D2, RAN, SOX4, FOXP3, SQSTM1, ULK1 and RUBCNL/Pacer (PubMed:16141325, PubMed:17189187, PubMed:17360565, PubMed:17996965, PubMed:24835996, PubMed:26829474, PubMed:29040603, PubMed:30409912, PubMed:30704899, PubMed:31857589, PubMed:32034146, PubMed:32817552, PubMed:34077757). Directly acetylates and activates ATM (PubMed:16141325). Promotes nucleotide excision repair (NER) by mediating acetylation of ERCC4/XPF, thereby promoting formation of the ERCC4-ERCC1 complex (PubMed:32034146). Relieves NR1D2-mediated inhibition of APOC3 expression by acetylating NR1D2 (PubMed:17996965). Acts as a regulator of regulatory T-cells (Treg) by catalyzing FOXP3 acetylation, thereby promoting FOXP3 transcriptional repressor activity (PubMed:17360565, PubMed:24835996). Involved in skeletal myoblast differentiation by mediating acetylation of SOX4 (PubMed:26291311). Catalyzes acetylation of APBB1/FE65, increasing its transcription activator activity (PubMed:33938178). Promotes transcription elongation during the activation phase of the circadian cycle by

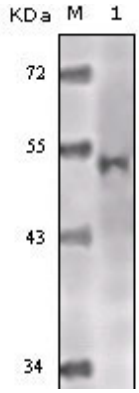
	catalyzing acetylation of BMAL1, promoting elongation of circadian transcripts (By similarity). Together with GSK3 (GSK3A or GSK3B), acts as a regulator of autophagy: phosphorylated at Ser-86 by GSK3 under starvation conditions, leading to activate acetyltransferase activity and promote acetylation of key autophagy regulators, such as ULK1 and RUBCNL/Pacer (PubMed:30704899). Acts as a regulator of the cGAS-STING innate antiviral response by catalyzing acetylation the N-terminus of CGAS, thereby promoting CGAS DNA-binding and activation (PubMed:32817552). Also regulates lipid metabolism by mediating acetylation of CHKA or LPIN1 (PubMed:34077757). Promotes lipolysis of lipid droplets following glucose deprivation by mediating acetylation of isoform 1 of CHKA, thereby promoting monomerization of CHKA and its conversion into a tyrosine-protein kinase (PubMed:34077757). Acts as a regulator of fatty-acid-induced triacylglycerol synthesis by catalyzing acetylation of LPIN1, thereby promoting the synthesis of diacylglycerol (PubMed:29765047). In addition to protein acetyltransferase, can use different acyl-CoA substrates, such as (2E)-butenoyl-CoA (crotonyl-CoA), S-lactoyl-CoA (lactyl-CoA) and 2-hydroxyisobutanoyl-CoA (2-hydroxyisobutyryl-CoA), and is able to mediate protein crotonylation, lactylation and 2- hydroxyisobutyrylation, respectively (PubMed:29192674, PubMed:34608293, PubMed:38961290). Acts as a key regulator of chromosome segregation and kinetochore-microtubule attachment during mitosis by mediating acetylation or crotonylation of target proteins (PubMed:26829474, PubMed:29040603, PubMed:30409912, PubMed:34608293). Catalyzes acetylation of AURKB at kinetochores, increasing AURKB activity and promoting accurate chromosome segregation in mitosis (PubMed:26829474). Acetylates RAN during mitosis, promoting microtubule assembly at mitotic chromosomes (PubMed:29040603). Acetylates NDC80/HEC1 during mitosis, promoting robust kinetochore-microtubule attachment (PubMed:30409912). Catalyzes crotonylation of MAPRE1/EB1, thereby ensuring accurate spindle positioning in mitosis (PubMed:34608293). Catalyzes lactylation of NBN/NBS1 in response to DNA damage, thereby promoting DNA double-strand breaks (DSBs) via homologous recombination (HR) (PubMed:38961290).
Cellular Location	Nucleus. Chromosome. Cytoplasm. Chromosome, centromere, kinetochore. Cytoplasm, cytoskeleton, spindle pole. Nucleus, nucleolus. Cytoplasm, perinuclear region. Note=Upon stimulation with EDN1, it is exported from the nucleus to the perinuclear region and UV irradiation induces translocation into punctuate subnuclear structures named nuclear bodies (PubMed:11262386). Transiently localizes to kinetochores in early mitosis (PubMed:26829474). Localizes to spindle poles when chromosomes align during metaphase (PubMed:34608293). Localizes in the cytoplasm and nucleus of round spermatids (By similarity) {ECO:0000250|UniProtKB:Q8CHK4, ECO:0000269|PubMed:11262386, ECO:0000269|PubMed:26829474, ECO:0000269|PubMed:34608293}

References

1. Mizuguchi, G. et al. Science 2004 303, 343-348. 2. Jin, J. et al. Trends Biochem. Sci. 2005 30, 680-687. 3. Raisner, R.M. and Madhani, H.D. Curr. Opin. Genet. 2006 Dev. 16, 119-124.

Images

Figure 1: Western blot analysis using Tip60 mouse mAb against truncated Tip60 recombinant protein.



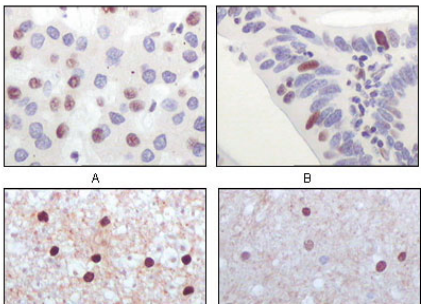


Figure 2: Immunohistochemical analysis of paraffin-embedded human liver carcinoma (A), recturn carcinoma (B), normal medulla tissue (C) and normal interbrain tissues (D), showing nuclear localization using Tip60 mouse mAb with DAB staining.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.