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SIRT6 Antibody (C-term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP6245a

Product Information

Application	IHC-P, WB, E
Primary Accession	Q8N6T7
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	39119
Antigen Region	290-319

Additional Information

Gene ID	51548
Other Names	NAD-dependent protein deacetylase sirtuin-6, 351-, Regulatory protein SIR2 homolog 6, SIR2-like protein 6, SIRT6, SIR2L6
Target/Specificity	This SIRT6 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 290-319 amino acids from the C-terminal region of human SIRT6.
Dilution	IHC-P~~1:100~500 WB~~1:500 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is prepared by Saturated Ammonium Sulfate (SAS) precipitation followed by dialysis against PBS.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	SIRT6 Antibody (C-term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	SIRT6 {ECO:0000303|PubMed:10873683, ECO:0000312|HGNC:HGNC:14934}
Function	NAD-dependent protein deacetylase, deacylase and mono-ADP-ribosyltransferase that plays an essential role in DNA damage repair, telomere maintenance, metabolic homeostasis, inflammation, tumorigenesis and aging (PubMed:18337721, PubMed:19135889, PubMed:19625767, PubMed:21362626, PubMed:21680843, PubMed:23217706,

PubMed:23552949, PubMed:23653361, PubMed:24052263, PubMed:27180906, PubMed:27322069, PubMed:29555651, PubMed:30374165). Displays protein- lysine deacetylase or defatty-acylase (demyristoylase and depalmitoylase) activity, depending on the context (PubMed:23552949, PubMed:24052263, PubMed:27322069). Acts as a key histone deacetylase by catalyzing deacetylation of histone H3 at 'Lys-9', 'Lys-18' and 'Lys- 56' (H3K9ac, H3K18ac and H3K56ac, respectively), suppressing target gene expression of several transcription factors, including NF-kappa-B (PubMed:19625767, PubMed:21362626, PubMed:23892288, PubMed:23911928, PubMed:24012758, PubMed:26456828, PubMed:26898756, PubMed:27043296, PubMed:27180906, PubMed:30374165, PubMed:33067423). Acts as an inhibitor of transcription elongation by mediating deacetylation of H3K9ac and H3K56ac, preventing release of NELFE from chromatin and causing transcriptional pausing (By similarity). Involved in DNA repair by promoting double-strand break (DSB) repair: acts as a DSB sensor by recognizing and binding DSB sites, leading to (1) recruitment of DNA repair proteins, such as SMARCA5/SNF2H, and (2) deacetylation of histone H3K9ac and H3K56ac (PubMed:23911928, PubMed:31995034, PubMed:32538779). SIRT6 participation to DSB repair is probably involved in extension of life span (By similarity). Also promotes DNA repair by deacetylating non-histone proteins, such as DDB2 and p53/TP53 (PubMed:29474172, PubMed:32789493). Specifically deacetylates H3K18ac at pericentric heterochromatin, thereby maintaining pericentric heterochromatin silencing at centromeres and protecting against genomic instability and cellular senescence (PubMed:27043296). Involved in telomere maintenance by catalyzing deacetylation of histone H3 in telomeric chromatin, regulating telomere position effect and telomere movement in response to DNA damage (PubMed:18337721, PubMed:19625767, PubMed:21847107). Required for embryonic stem cell differentiation by mediating histone deacetylation of H3K9ac (PubMed:25915124, PubMed:29555651). Plays a major role in metabolism by regulating processes such as glycolysis, gluconeogenesis, insulin secretion and lipid metabolism (PubMed:24012758, PubMed:26787900). Inhibits glycolysis via histone deacetylase activity and by acting as a corepressor of the transcription factor HIF1A, thereby controlling the expression of multiple glycolytic genes (By similarity). Has tumor suppressor activity by repressing glycolysis, thereby inhibiting the Warburg effect (PubMed:23217706). Also regulates glycolysis and tumorigenesis by mediating deacetylation and nuclear export of non-histone proteins, such as isoform M2 of PKM (PKM2) (PubMed:26787900). Acts as a negative regulator of gluconeogenesis by mediating deacetylation of non-histone proteins, such as FOXO1 and KAT2A/GCN5 (PubMed:23142079, PubMed:25009184). Promotes beta-oxidation of fatty acids during fasting by catalyzing deacetylation of NCOA2, inducing coactivation of PPARA (By similarity). Acts as a regulator of lipid catabolism in brown adipocytes, both by catalyzing deacetylation of histones and non-histone proteins, such as FOXO1 (By similarity). Also acts as a regulator of circadian rhythms, both by regulating expression of clock-controlled genes involved in lipid and carbohydrate metabolism, and by catalyzing deacetylation of PER2 (By similarity). The defatty-acylase activity is specifically involved in regulation of protein secretion (PubMed:23552949, PubMed:24052263, PubMed:27322069, PubMed:28406396). Has high activity toward long-chain fatty acyl groups and mediates protein-lysine demyristoylation and depalmitoylation of target proteins, such as RRAS2 and TNF, thereby regulating their secretion (PubMed:23552949, PubMed:28406396). Also acts as a mono-ADP-ribosyltransferase by mediating mono-ADP-ribosylation of PARP1, TRIM28/KAP1 or SMARCC2/BAF170 (PubMed:21680843, PubMed:22753495, PubMed:27322069, PubMed:27568560). Mono-ADP-ribosyltransferase activity is involved in DNA repair, cellular senescence, repression of LINE-1 retrotransposon elements and regulation of transcription (PubMed:21680843, PubMed:22753495, PubMed:27568560).

Cellular Location	Nucleus. Chromosome. Chromosome, telomere. Endoplasmic reticulum. Note=Predominantly nuclear (PubMed:18337721). Associated with pericentric heterochromatin and telomeric heterochromatin regions (PubMed:18337721, PubMed:27043296) Localizes to DNA damage sites: directly recognizes and binds double- strand breaks (DSBs) sites via a tunnel-like structure that has high affinity for DSBs (PubMed:21680843, PubMed:23911928, PubMed:27568560, PubMed:31995034, PubMed:32538779). A fraction localizes to the endoplasmic reticulum (PubMed:23552949).

Background

SIRT6 is a member of the sirtuin family of proteins, homologs to the yeast Sir2 protein. Members of the sirtuin family are characterized by a sirtuin core domain and grouped into four classes. The functions of human sirtuins have not yet been determined; however, yeast sirtuin proteins are known to regulate epigenetic gene silencing and suppress recombination of rDNA. Studies suggest that the human sirtuins may function as intracellular regulatory proteins with mono-ADP-ribosyltransferase activity.

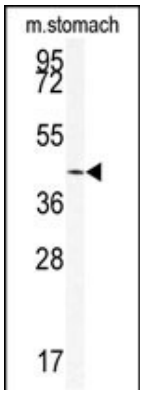
References

Ota, T., et al., Nat. Genet. 36(1):40-45 (2004).
Strausberg, R.L., et al., Proc. Natl. Acad. Sci. U.S.A. 99(26):16899-16903 (2002).
Frye, R.A., Biochem. Biophys. Res. Commun. 273(2):793-798 (2000).

Images



Formalin-fixed and paraffin-embedded human cancer tissue reacted with the primary antibody, which was peroxidase-conjugated to the secondary antibody, followed by DAB staining. This data demonstrates the use of this antibody for immunohistochemistry; clinical relevance has not been evaluated. BC = breast carcinoma; HC = hepatocarcinoma.



Western blot analysis of SIRT6 Antibody (C-term) (Cat.#AP6245a) in mouse stomach tissue lysates (35ug/lane). SIRT6 (arrow) was detected using the purified Pab.

Citations

- Down-regulation of sirtuin 3 is associated with poor prognosis in hepatocellular carcinoma after resection
- Direct evidence of sirtuin downregulation in the liver of non-alcoholic fatty liver disease patients.

- Cyclic AMP Mimics the Anti-ageing Effects of Calorie Restriction by Up-Regulating Sirtuin.
- Sirtuin-3 (SIRT3), a novel potential therapeutic target for oral cancer.
- SIRT7 is a histone desuccinylase that functionally links to chromatin compaction and genome stability.
- Calorie intake rather than food quantity consumed is the key factor for the anti-aging effect of calorie restriction

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