Revision 1

Store at -20C

#4243

Acetyl-Histone H3 (Lys56) Antibody

Cell Signaling TECHNOLOGY®

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H M R Mk	Endogenous	17	Rabbit	#P68431	8350

Product Usage Information

Application	Dilution
Western Blotting	1:1000

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at –20°C. Do not aliquot the antibody.

Specificity/Sensitivity

Acetyl-Histone H3 (Lys56) Antibody detects endogenous levels of histone H3 only when acetylated on Lys56. This antibody does not cross-react with histone H3 acetylated on lysines 9, 14, 18 or 27.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to the amino terminus of histone H3 in which Lys56 is acetylated. Antibodies are purified by protein A and peptide affinity chromatography.

Background

Modulation of chromatin structure plays an important role in the regulation of transcription in eukaryotes. The nucleosome, made up of DNA wound around eight core histone proteins (two each of H2A, H2B, H3, and H4), is the primary building block of chromatin (1). The amino-terminal tails of core histones undergo various posttranslational modifications, including acetylation, phosphorylation, methylation, and ubiquitination (2-5). These modifications occur in response to various stimuli and have a direct effect on the accessibility of chromatin to transcription factors and, therefore, gene expression (6). In most species, histone H2B is primarily acetylated at Lys5, 12, 15, and 20 (4,7). Histone H3 is primarily acetylated at Lys9, 14, 18, 23, 27, and 56. Acetylation of H3 at Lys9 appears to have a dominant role in histone deposition and chromatin assembly in some organisms (2,3). Phosphorylation at Ser10, Ser28, and Thr11 of histone H3 is tightly correlated with chromosome condensation during both mitosis and meiosis (8-10). Phosphorylation at Thr3 of histone H3 is highly conserved among many species and is catalyzed by the kinase haspin. Immunostaining with phospho-specific antibodies in mammalian cells reveals mitotic phosphorylation at Thr3 of H3 in prophase and its dephosphorylation during anaphase (11).

Acetylation of histone H3 on Lys56 is critical for proper packaging of DNA into chromatin during DNA replication and DNA damage repair (12-14). Histone H3 is acetylated on Lys56 by CBP and p300 in response to DNA damage induced by treatment of cells with γ radiation, ultraviolet light, MMS, or hydroxyurea (14). Following DNA damage, chromatin assembly factor 1 protein (CAF-1) incorporates acetylated histones into chromatin at sites of DNA repair (14). The class III histone deacetylases (HDACs) SirT1, SirT2 and SirT6 have been shown to deacetylate histone H3 at Lys56 (14,15); however, treatment of cells with sodium butyrate or trichostatin A also leads to increased acetylation, implicating a class I or class II HDAC as an additional histone H3 Lys56 deacetylase (14). Histone H3 Lys56 acetylation is high in multiple types of cancer, and acetylation levels directly correlate with cellular dedifferentiation and tumorigenicity (14).

Background References

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Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat **Mk:** Monkey

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