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#27683**Acetyl-Histone H3 (Lys36) (D9T5Q) Rabbit mAb**

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Applications: W, IP, IF-IC, FC-FP, ChIP, ChIP-seq	Reactivity: H M R Mk	Sensitivity: Endogenous	MW (kDa): 17	Source/Isotype: Rabbit IgG	UniProt ID: #P68431	Entrez-Gene Id: 8350
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Product Usage Information

For optimal ChIP and ChIP-seq results, use 10 µl of antibody and 10 µg of chromatin (approximately 4 x 10⁶ cells) per IP. This antibody has been validated using SimpleChIP[®] Enzymatic Chromatin IP Kits.

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:200
Immunofluorescence (Immunocytochemistry)	1:3200
Flow Cytometry (Fixed/Permeabilized)	1:400
Chromatin IP	1:50
Chromatin IP-seq	1:50

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C. Do not aliquot the antibody.

Specificity/Sensitivity

Acetyl-Histone H3 (Lys36) (D9T5Q) Rabbit mAb recognizes endogenous levels of histone H3 protein only when acetylated at Lys36. This antibody does not cross react with other known acetylated lysine residues on histones H3, H4, H2A and H2B.

Species predicted to react based on 100% sequence homology

Hamster, D. melanogaster, Xenopus, Zebrafish, Pig

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding acetylated Lys36 of human histone H3 protein.

Background

The nucleosome, made up of four core histone proteins (H2A, H2B, H3, and H4), is the primary building block of chromatin. Originally thought to function as a static scaffold for DNA packaging, histones have now been shown to be dynamic proteins, undergoing multiple types of post-translational modifications, including acetylation, phosphorylation, methylation, and ubiquitination (1,2). Histone acetylation occurs mainly on the amino-terminal tail domains of histones H2A (Lys5), H2B (Lys5, 12, 15, and 20), H3 (Lys9, 14, 18, 23, 27, 36, and 56), and H4 (Lys5, 8, 12, and 16) and is important for the regulation of histone deposition, transcriptional activation, DNA replication, recombination, and DNA repair (1-3). Hyper-acetylation of the histone tails neutralizes the positive charge of these domains and is believed to weaken histone-DNA and nucleosome-nucleosome interactions, thereby destabilizing chromatin structure and increasing the accessibility of DNA to various DNA-binding proteins (4,5). In addition, acetylation of specific lysine residues creates docking sites for a protein module called the bromodomain, which binds to acetylated lysine residues (6). Many transcription and chromatin regulatory proteins contain bromodomains and may be recruited to gene promoters, in part, through binding of acetylated histone tails. Histone acetylation is mediated by histone acetyltransferases (HATs), such as CBP/p300, GCN5L2, PCAF, and Tip60, which are recruited to genes by DNA-bound protein factors to facilitate transcriptional activation (3). Deacetylation, which is mediated by histone deacetylases (HDAC and sirtuin proteins), reverses the effects of acetylation and generally facilitates transcriptional repression (7,8).

Histone H3 Lys36 acetylation is mediated by the GCN5 histone acetyltransferase and is conserved in multiple species, from yeast to mammals (9). Acetyl-histone H3 Lys36 is localized predominantly to the promoters of active RNA polymerase II-transcribed genes and overlaps with other acetylation marks associated with transcriptional activation, such as acetyl-histone H3 Lys9 and Lys14 (9). The pattern of acetyl-histone H3 Lys36 is inversely related to that of tri-methyl-histone H3 Lys36, which is found in the gene body of actively transcribed genes.

Background References

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- Jaskelioff, M. and Peterson, C.L. (2003) *Nat Cell Biol* 5, 395-9.
- Roth, S.Y. et al. (2001) *Annu Rev Biochem* 70, 81-120.

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 6. Yang, X.J. (2004) *Bioessays* 26, 1076-87.
 7. Haberland, M. et al. (2009) *Nat Rev Genet* 10, 32-42.
 8. Haigis, M.C. and Sinclair, D.A. (2010) *Annu Rev Pathol* 5, 253-95.
 9. Morris, S.A. et al. (2007) *J Biol Chem* 282, 7632-40.
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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 **IP:** Immunoprecipitation **IF-IC:** Immunofluorescence (Immunocytochemistry) **FC-FP:** Flow Cytometry (Fixed/Permeabilized) **ChIP:** Chromatin IP **ChIP-seq:** Chromatin IP-seq

Cross-Reactivity Key

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

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