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#53312

# Methyl-Histone H3 (Lys27) Antibody Sampler Kit



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New 04/18

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Products Included	Product #	Quantity	Mol. Wt.	Isotype/Source
Tri-Methyl-Histone H3(K27) (C36B11) Rabbit mAb	9733	20 µl	17 kDa	Rabbit IgG
Di-Methyl-Histone H3 (K27) (D18C8) XP(R) Rabbit mAb	9728	20 µl	17 kDa	Rabbit IgG
Mono-Methyl-Histone H3 (Lys27) (D3R8N) Rabbit mAb	84932	20 µl	17 kDa	Rabbit IgG
Histone H3 (D1H2) XP® Rabbit mAb	4499	20 µl	17 kDa	Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat

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**Description:** The Methyl-Histone H3 (Lys27) Antibody Sampler Kit provides an economical means of detecting levels of mono-, di-, and tri-methyl histone H3 Lys27 using methyl-specific and control histone H3 antibodies. The kit contains enough primary antibodies to perform at least two western blot experiments.

**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). Histone methylation is a major determinant for the formation of active and inactive regions of the genome and is crucial for the proper programming of the genome during development (2,3). Arginine methylation of histones H3 (Arg2, 17, 26) and H4 (Arg3) promotes transcriptional activation and is mediated by a family of protein arginine methyltransferases (PRMTs), including the co-activators PRMT1 and CARM1 (PRMT4) (4). In contrast, a more diverse set of histone lysine methyltransferases has been identified, all but one of which contain a conserved catalytic SET domain originally identified in the *Drosophila* Su(var)3-9, Enhancer of zeste, and Trithorax proteins. Lysine methylation occurs primarily on histones H3 (Lys4, 9, 27, 36, 79) and H4 (Lys20) and has been implicated in both transcriptional activation and silencing (4). Methylation of these lysine residues coordinates the recruitment of chromatin modifying enzymes containing methyl-lysine binding modules such as chromodomains (HP1, PRC1), PHD fingers (BPTF, ING2), tudor domains (53BP1), and WD-40 domains (WDR5) (5-8). The discovery of histone demethylases such as PADI4, LSD1, JMJD1, JMJD2, and JHDM1 has shown that methylation is a reversible epigenetic marker (9).

Methylation of histone H3 Lys27 is generally associated with transcriptional repression and regulation of stem cell pluripotency and differentiation, through the regulation of facultative

heterochromatin. Mono-, di-, and tri-methylation of histone H3 Lys27 are all mediated by polycomb repressor complex 2 (PRC2), which contains either the EZH1 or EZH2 methyltransferase proteins. Tri- and di-methyl-histone H3 Lys27 levels are highest at the promoters of polycomb-repressed genes. In addition, tri- and di-methyl-histone H3 Lys27 is found at the promoters of inactive, but transcriptionally poised genes that also contain the active tri-methyl-histone H3 Lys4 modification. Mono-methyl-histone H3 Lys27 is more widely dispersed and found in the bodies of active genes.

**Specificity/Sensitivity:** Each antibody in the Methyl-Histone H3 (Lys27) Antibody Sampler Kit detects endogenous levels of its target protein. Tri-Methyl-Histone H3 (Lys27) (C36B11) Rabbit mAb detects endogenous levels of histone H3 only when tri-methylated on Lys27. The antibody does not cross-react with non-methylated, mono-methylated or di-methylated Lys27. Di-Methyl-Histone H3 (Lys27) (D18C8) XP® Rabbit mAb detects endogenous levels of histone H3 when di-methylated on Lys27. The antibody does show some cross-reactivity with mono-methylated Lys27, but does not cross-react with non-methylated or tri-methylated Lys27. Mono-Methyl-Histone H3 (Lys27) (D3R8N) Rabbit mAb recognizes endogenous levels of histone H3 protein only when mono-methylated at Lys27. This antibody does not cross-react with non-methylated, di-methylated, or tri-methylated Lys27. Histone H3 (D1H2) XP® Rabbit mAb detects endogenous levels of total Histone H3 protein, including isoforms H3.1, H3.2, H3.3, and the variant histone CENP-A. This antibody does not cross-react with other core histones.

**Source/Purification:** Monoclonal methyl-histone H3 Lys27 antibodies are produced by immunizing rabbits with synthetic peptides corresponding to the amino terminus of histone H3 in which Lys27 is mono-, di-, or tri-methylated. The control histone H3 monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to the carboxy terminus of the human histone H3 protein.

**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 antibodies.

#### Background References:

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- (3) Lin, W. and Dent, S.Y. (2006) *Curr Opin Genet Dev* 16, 137-42.
- (4) Lee, D.Y. et al. (2005) *Endocr Rev* 26, 147-70.
- (5) Daniel, J.A. et al. (2005) *Cell Cycle* 4, 919-26.
- (6) Shi, X. et al. (2006) *Nature* 442, 96-9.
- (7) Wysocka, J. et al. (2006) *Nature* 442, 86-90.
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U.S. Patent No. 7,429,487, foreign equivalents, and child patents deriving therefrom.

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