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Tri-Methyl-Histone H3 (Lys4) (C42D8) Rabbit mAb (Alexa Fluor® 555 Conjugate)

100 µl (50 tests)

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Entrez-Gene ID #8350
UniProt ID #P68431

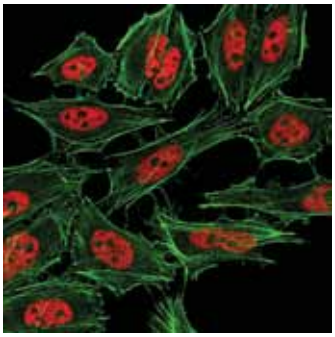
For Research Use Only. Not For Use In Diagnostic Procedures.

Applications	Species Cross-Reactivity*	Isotype
IF-IC	H, M, R, Mk, Dm, Sc,	Rabbit IgG
Endogenous	(X, Z)	

Description: This Cell Signaling Technology antibody is conjugated to Alexa Fluor® 555 fluorescent dye and tested in-house for direct immunofluorescent analysis in human cells. The antibody is expected to exhibit the same species cross-reactivity as the unconjugated Tri-Methyl-Histone H3 (Lys4) (C42D8) Rabbit mAb #9751.

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).

HeLa



Confocal immunofluorescent analysis of HeLa cells using Tri-Methyl-Histone H3 (Lys4) (C42D8) Rabbit mAb (Alexa Fluor® 555 Conjugate) (red). Actin filaments were labeled with Alexa Fluor® 488 Phalloidin #8878 (green).

Specificity/Sensitivity: Tri-Methyl-Histone H3 (Lys4) (C42D8) Rabbit mAb (Alexa Fluor® 555 Conjugate) detects endogenous levels of histone H3 when tri-methylated on Lys4. This antibody shows some cross-reactivity with histone H3 that is di-methylated on Lys4, but does not cross-react with non-methylated or mono-methylated histone H3 Lys4. In addition, the antibody does not cross-react with methylated histone H3 Lys9, Lys27, Lys36 or methylated histone H4 Lys20.

Source/Purification: Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to the amino terminus of histone H3 in which Lys4 is tri-methylated.

Storage: Supplied in PBS (pH 7.2), less than 0.1% sodium azide and 2 mg/ml BSA. Store at 4°C. *Protect from light. Do not freeze.*

***Species cross-reactivity is determined by western blot using the unconjugated antibody.**

Recommended Antibody Dilutions:

Immunofluorescence (IF-IC)	1:50

Background References:

(1) Peterson, C.L. and Laniel, M.A. (2004) *Curr. Biol.* 14, R546-R551.

(2) Kubicek, S. et al. (2006) *Ernst Schering Res. Found Workshop*, 1-27.

(3) Lin, W. and Dent, S.Y. (2006) *Curr. Opin. Genet. Dev.* 16, 137-142.

(4) Lee, D.Y. et al. (2005) *Endocr. Rev.* 26, 147-170.

(5) Daniel, J.A. et al. (2005) *Cell Cycle* 4, 919-926.

(6) Shi, X. et al. (2006) *Nature* 442, 96-99.

(7) Wysocka, J. et al. (2006) *Nature* 442, 86-90.

(8) Wysocka, J. et al. (2005) *Cell* 121, 859-872.

(9) Trojer, P. and Reinberg, D. (2006) *Cell* 125, 213-217.

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Applications: **W**—Western **IP**—Immunoprecipitation **IHC**—Immunohistochemistry **ChIP**—Chromatin Immunoprecipitation **IF**—Immunofluorescence **F**—Flow cytometry **E-P**—ELISA-Peptide **Species Cross-Reactivity:** **H**—human **M**—mouse **R**—rat **Hm**—hamster **Mk**—monkey **Mi**—mink **C**—chicken **Dm**—D. melanogaster **X**—Xenopus **Z**—zebrafish **B**—bovine **Dg**—dog **Pg**—pig **Sc**—S. cerevisiae **Ce**—C. elegans **Hr**—Horse **All**—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.