

# PRODUCT INFORMATION



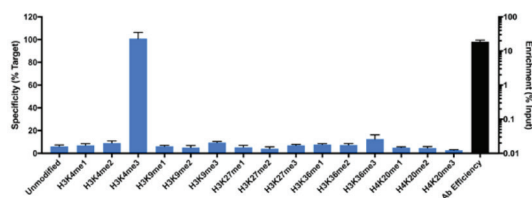
## Histone H3K4Me3 Monoclonal Antibody (RM340)

Item No. 32130

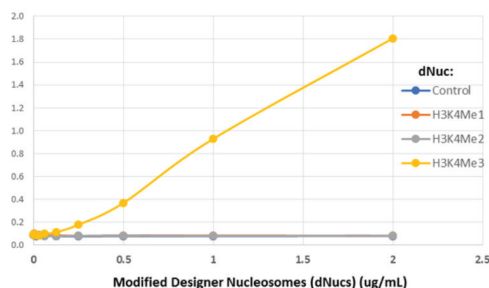
### Overview and Properties

**Contents:** This vial contains 100 µg of protein A-affinity purified monoclonal antibody.  
**Synonym:** Trimethylated Histone H3 Lysine 4  
**Immunogen:** Peptide corresponding to H3K4Me3  
**Cross Reactivity:** (+) H3K4Me3; (-) Unmodified H3K4, H3K4Me1, H3K4Me2, H3K9Me1, H3K9Me2, H3K9Me3, H3K27Me1, H3K27Me2, H3K27Me3, H3K36Me1, H3K36Me2, H3K36Me3, H4K20Me1, H4K20Me2, H4K20Me3  
**Species Reactivity:** (+) Vertebrates  
**Form:** Liquid  
**Storage:** -20°C (as supplied)  
**Stability:** ≥1 year  
**Storage Buffer:** PBS with 50% glycerol, 1% BSA, and 0.09% sodium azide  
**Concentration:** 1 mg/ml  
**Clone:** RM340  
**Host:** Rabbit  
**Isotype:** IgG  
**Applications:** Chromatin immunoprecipitation (ChIP), ELISA, and multiplex-based assays; the recommended starting concentration for ChIP is 1-5 µg/ml, 1-10 µg/ml for ELISA, and 0.5-2 µg/ml for multiplex-based assays. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

### Images



**SNAP-ChIP TM/qPCR Using Histone H3K4Me3 Monoclonal Antibody (RM340).** Histone H3K4Me3 Monoclonal Antibody (RM340) (3 µg at 17 µg/ml) was tested in native ChIP with 3 µg HEK293 chromatin (~1 x 10<sup>6</sup> cells). Specificity (left Y-axis; all bars show the mean ± SEM from six independent ChIP experiments; note <15% cross reactivity outside H3K4me3) was determined by quantitative real-time PCR (qPCR) for the duplicate DNA barcodes corresponding to each modified nucleosome in the SNAP-ChIP K-MetStat panel (X-axis). Black bar represents antibody efficiency (right Y-axis; log scale) and indicates percentage of the barcoded H3K4me3 nucleosome target immunoprecipitated relative to input.



**ELISA of Designer Nucleosomes (dNucs™)** (Recombinant Human Nucleosome with H3K4 Modified), using Histone H3K4Me3 Monoclonal Antibody (RM340) (10 µg/ml).

**WARNING**  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

**SAFETY DATA**  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

**WARRANTY AND LIMITATION OF REMEDY**  
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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## Description

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Histone H3 is a nuclear protein and a component of the nucleosome core, a basic unit of chromatin, that is essential for organizing genomic DNA in eukaryotic nuclei.<sup>1</sup> It is a globular protein that contains an unstructured N-terminal tail that extends outside of the nucleosome core and is subject to various post-translational modifications (PTMs), including methylation, phosphorylation, acetylation, and citrullination.<sup>1,2</sup> Trimethylation of histone H3 at lysine 4 (H3K4Me3) is found in euchromatic promoter regions and is associated with active transcription.<sup>3</sup> It inhibits several H3K9 methyltransferases and has differential effects on the activities of the KDM7 demethylases PHF8 and KDM7A, activating and inhibiting H3K9Me3 demethylation, respectively. Mislocalization of H3K4Me3 is associated with disease progression and memory deficits in patients with Alzheimer's disease.<sup>4</sup> Cayman's Histone H3K4Me3 Monoclonal Antibody (RM340) can be used for chromatin immunoprecipitation (ChIP), ELISA, and multiplex-based assay applications.

## References

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1. Hyun, K., Jeon, J., Park, K., *et al.* Writing, erasing and reading histone lysine methylations. *Exp. Mol. Med.* **49(4)**, e324 (2017).
2. Sharda, A., Amnekar, R.V., Natu, A., *et al.* Histone posttranslational modifications: Potential role in diagnosis, prognosis, and therapeutics of cancer. *Prognostic Epigenetics*. Sharma, S., editor, *Academic Press* (2019).
3. Pack, L.R., Yamamoto, K.R., and Fujimori, D.G. Opposing chromatin signals direct and regulate the activity of lysine demethylase 4C (KDM4C). *J. Biol. Chem.* **291(12)**, 6060-6070 (2016).
4. Mastroeni, D., Delvaux, E., Nolz, J., *et al.* Aberrant intracellular localization of H3k4me3 demonstrates an early epigenetic phenomenon in Alzheimer's disease. *Neurobiol. Aging* **36(12)**, 3121-3129 (2015).

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