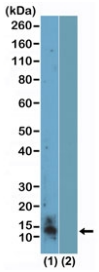
H4R3me2s Antibody / HIST1H4 Symmetric Arginine Methylation Chromatin Repression Antibody [clone RM459] (R20473)

Catalog No.	Formulation	Size
R20473-100UG	1 mg/ml in PBS with 50% glycerol, 1% BSA and 0.09% sodium azide	100 ug

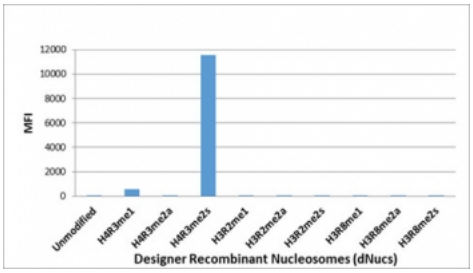
Recombinant RABBIT MONOCLONAL

Bulk quote request

Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Host	Rabbit
Clonality	Recombinant Rabbit Monoclonal
Isotype	Rabbit IgG
Clone Name	RM459
Purity	Protein A purified from animal origin-free supernatant
UniProt	P62805
Applications	Western Blot : 0.1ug/ml-2ug/ml
Limitations	This recombinant Symmetric Dimethyl-Histone H4/H4R3me2s antibody is available for research use only.



H4R3me2s Antibody / HIST1H4 Symmetric Arginine Methylation Chromatin Repression Antibody (clone RM459) for WB. Western blot analysis of HIST1H4 / Histone H4 arginine 3 symmetric dimethylation (H4R3me2s) in acid extracts of human K562 cells and recombinant Histone H4 using H4R3me2s Antibody / HIST1H4 Symmetric Arginine Methylation Chromatin Repression Antibody. A band is detected at the predicted molecular weight corresponding to symmetrically dimethylated Histone H4, consistent with nuclear chromatin-associated localization and PRMT5-mediated transcriptional repression.



H4R3me2s Antibody / HIST1H4 Symmetric Arginine Methylation Chromatin Repression Antibody (clone RM459) specificity analysis. Luminex assay using Designer Recombinant Nucleosomes (dNucs) demonstrating selective recognition of HIST1H4 / Histone H4 arginine 3 symmetric dimethylation (H4R3me2s). Strong signal is observed exclusively with nucleosomes containing the R3 symmetric dimethyl modification, while minimal to no reactivity is detected with unmodified or alternative arginine modification states, confirming high specificity for the PRMT5-associated symmetric dimethyl H4R3 chromatin mark.

Description

Histone H4 (HIST1H4) arginine 3 is a key regulatory residue within the N-terminal tail that undergoes post-translational methylation to control chromatin structure and gene expression. Symmetric dimethylation at this site (H4R3me2s) is a well-characterized epigenetic mark associated with transcriptional repression and chromatin silencing. H4R3me2s Antibody / HIST1H4 Symmetric Arginine Methylation Chromatin Repression Antibody (clone RM459) is designed to detect Histone H4 symmetrically dimethylated at arginine 3, enabling precise investigation of this repressive chromatin modification. This antibody is part of our broader Histone H4 antibody collection, including acetylation, methylation, phosphorylation, and total H4 detection reagents for chromatin and epigenetics research.

HIST1H4 antibody, also referred to as Histone H4 antibody and H4R3me2s antibody in the literature, specifically recognizes arginine 3 when symmetrically dimethylated, while excluding asymmetric dimethylation and other histone modifications. This distinction is critical because methylation at arginine residues can occur in either symmetric or asymmetric configurations, each catalyzed by different classes of protein arginine methyltransferases and associated with distinct biological outcomes.

This recombinant rabbit monoclonal clone RM459 antibody is uniquely positioned for studies of PRMT5-mediated chromatin regulation. H4R3me2s is catalyzed by PRMT5, a type II protein arginine methyltransferase that operates within multiprotein complexes including MEP50 and other regulatory factors. These complexes coordinate deposition of symmetric dimethyl marks and facilitate recruitment of chromatin-modifying enzymes that establish transcriptionally repressive environments.

At the molecular level, symmetric dimethylation of arginine 3 alters the interaction surface of the histone H4 tail, modulating its ability to engage transcriptional regulators and chromatin remodeling complexes. H4R3me2s has been shown to inhibit binding of transcriptional coactivators and to promote recruitment of repressive complexes, thereby reducing chromatin accessibility and limiting transcriptional initiation.

H4R3me2s occupies a distinct position within the arginine methylation landscape. In contrast to asymmetric dimethylation at the same residue (H4R3me2a), which is catalyzed by PRMT1 and associated with transcriptional activation, symmetric dimethylation promotes gene repression and chromatin compaction. This opposing functionality highlights the importance of distinguishing between these modification states when analyzing chromatin regulation.

Functionally, H4R3me2s contributes to silencing of gene expression programs, regulation of developmental pathways, and maintenance of cellular identity. It is involved in establishing repressive chromatin domains and coordinating epigenetic states that restrict inappropriate transcriptional activation.

Beyond transcriptional control, PRMT5 and H4R3me2s are implicated in RNA processing, ribonucleoprotein assembly, and cell cycle regulation, reflecting broader roles in cellular homeostasis. Dysregulation of PRMT5 activity and associated arginine methylation marks has been linked to oncogenesis, where altered chromatin repression contributes to aberrant gene expression and tumor progression.

Importantly, H4R3me2s participates in cross-talk with other histone modifications, including lysine methylation and acetylation marks, contributing to combinatorial control of chromatin states. This integration of multiple epigenetic signals

underscores the complexity of the histone code and the need for modification-specific detection.

At the cellular level, Histone H4 symmetrically dimethylated at arginine 3 localizes to the nucleus and is associated with chromatin regions undergoing transcriptional repression and structural organization. Its distribution reflects coordinated regulation by PRMT5 and associated chromatin-modifying complexes.

This antibody supports detection of Histone H4 arginine 3 symmetric dimethylation, enabling investigation of chromatin silencing, PRMT5-dependent epigenetic regulation, and mechanisms controlling gene repression, cellular identity, and disease-associated chromatin remodeling.

Application Notes

The stated application concentrations are suggested starting points. Titration of the H4R3me2s Antibody / HIST1H4 Symmetric Arginine Methylation Chromatin Repression Antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

A symmetric dimethyl-Arginine 3 peptide from Histone H4 (Arg3) was used as the immunogen for the H4R3me2s Antibody / HIST1H4 Symmetric Arginine Methylation Chromatin Repression Antibody.

Storage

Store the recombinant Symmetric Dimethyl-Histone H4/H4R3me2s antibody at -20oC.

Alternate Names

Histone H4 Arg3 symmetric dimethyl antibody, H4R3me2s chromatin antibody, symmetric dimethyl histone H4 R3 antibody, H4 arginine methylation antibody