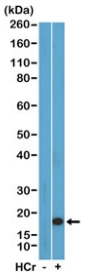
H3K27cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody [clone RM401] (R20417)

Catalog No.	Formulation	Size
R20417-100UG	1 mg/ml in PBS with 50% glycerol, 1% BSA and 0.09% sodium azide	100 ug

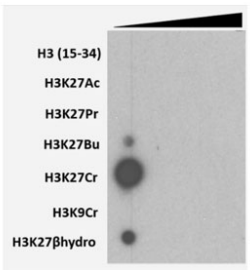
Recombinant RABBIT MONOCLONAL

Bulk quote request

Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Host	Rabbit
Clonality	Recombinant Rabbit Monoclonal
Isotype	Rabbit IgG
Clone Name	RM401
Purity	Protein A purified from animal origin-free supernatant
UniProt	P84243
Applications	Western blot: 0.5ug/ml-2ug/ml Dot blot: 0.5ug/ml-2ug/ml
Limitations	This recombinant H3K27cr antibody is available for research use only.



H3K27cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody (clone RM401) for WB. Western blot analysis of HIST1H3A / Histone H3 Lys27 crotonylation (H3K27cr) in acid extracts of human HeLa cells untreated (-) or treated (+) with sodium crotonate using H3K27cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody. A band is detected at the predicted molecular weight corresponding to crotonylated Histone H3, with increased signal in treated cells consistent with metabolite-driven chromatin activation and enhanced histone crotonylation.



H3K27cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody (clone RM401) specificity analysis. Peptide dot blot demonstrating selective recognition of HIST1H3A / Histone H3 Lys27 crotonylation (H3K27cr). Strong signal is observed exclusively with the K27 crotonylated peptide, while minimal to no reactivity is detected with unmodified H3, acetylated Lys27, propionylated, butyrylated, or beta-hydroxybutyrylated peptides, confirming high specificity for the crotonylated Lys27 modification and clear distinction from other lysine acylation states. Image courtesy of Jibo Zhang from Strahl lab, UNC School of Medicine.

Description

Histone H3 (HIST1H3A) lysine 27 is one of the most functionally important regulatory residues within the histone H3 N-terminal tail, serving as a central hub for epigenetic control of gene expression. Distinct post-translational modifications at this site define opposing chromatin states, with trimethylation at lysine 27 (H3K27me3) associated with Polycomb-mediated repression and acetylation (H3K27ac) marking active enhancers and promoters. Histone H3 Antibody / Lysine 27 Crotonylation Chromatin Activation Antibody (clone RM401) is designed to detect Histone H3 crotonylated at lysine 27, introducing a metabolically regulated activation mark into this well-established regulatory framework. This antibody is part of a broader collection of Histone H3 antibodies used to study chromatin structure, histone modifications, and epigenetic regulation.

HIST1H3A antibody, also referred to as Histone H3 antibody and H3K27cr antibody in the literature, specifically recognizes lysine 27 when modified by a crotonyl group while excluding acetylated and methylated forms. This selectivity is critical because lysine 27 is a competitive modification site, where multiple mutually exclusive marks determine chromatin state. Crotonylation at this residue therefore represents a distinct and functionally meaningful epigenetic signal rather than a redundant variant of acetylation.

This recombinant rabbit monoclonal clone RM401 antibody is uniquely positioned for studies of metabolic-epigenetic integration. Histone crotonylation is directly regulated by intracellular levels of crotonyl-CoA, a metabolite derived from fatty acid oxidation and amino acid metabolism. Changes in metabolic flux can therefore drive chromatin remodeling through modulation of crotonylation levels, linking cellular energy state to gene regulation.

At the molecular level, the crotonyl group differs structurally from the acetyl group by containing a planar, conjugated double bond system. This extended chemical structure alters the interaction landscape of histone tails with chromatin-associated proteins, often enhancing transcriptional activation relative to acetylation. As a result, crotonylation is increasingly recognized as a potent activating modification with distinct regulatory capacity.

Within the lysine 27 regulatory axis, H3K27cr occupies a unique position between classical activation and repression marks. While H3K27ac marks active regulatory elements and facilitates transcription factor recruitment, and H3K27me3 establishes stable repressive domains, crotonylation reflects a metabolically responsive activation state that integrates environmental and intracellular signaling inputs. This positions H3K27cr as a marker of dynamic and context-dependent chromatin activation.

Functionally, H3K27cr has been associated with transcriptionally active genomic regions, including promoters and enhancers, and is enriched in biological contexts requiring rapid and coordinated gene expression changes. These include developmental transitions, inflammatory signaling, and metabolic adaptation, where chromatin must respond quickly to shifting cellular conditions.

Importantly, crotonylation participates in complex cross-talk with other histone modifications at lysine 27. It may compete with acetylation for occupancy at this residue or coexist with other activating marks across the histone tail, contributing to combinatorial regulation of gene expression. This interplay adds an additional layer of regulatory complexity to the histone code and underscores the importance of distinguishing individual acylation states.

Unlike antibodies targeting acetylation or methylation alone, this antibody enables selective detection of crotonylation-specific chromatin pathways. It provides a critical tool for dissecting how alternative acyl modifications contribute to transcriptional regulation and chromatin dynamics.

At the cellular level, Histone H3 crotonylated at lysine 27 localizes to the nucleus and is enriched in transcriptionally active chromatin regions. Its distribution reflects dynamic regulation influenced by metabolic state, signaling pathways, and environmental conditions.

This antibody supports detection of Histone H3 lysine 27 crotonylation, enabling investigation of chromatin activation, metabolic-epigenetic coupling, and advanced regulatory mechanisms that extend beyond classical histone modification paradigms.

Application Notes

The stated application concentrations are suggested starting points. Titration of the H3K27cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

A crotonyl-peptide corresponding to Crotonyl-Histone H3 (Lys27) was used as the immunogen for the H3K27cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody.

Storage

Store the recombinant H3K27cr antibody at -20oC.

Alternate Names

Histone H3 Lys27 crotonylation antibody, H3K27cr chromatin antibody, crotonyl histone H3 Lys27 antibody, H3 K27 crotonylation antibody

Copyright © NSJ Bioreagents. All rights reserved.