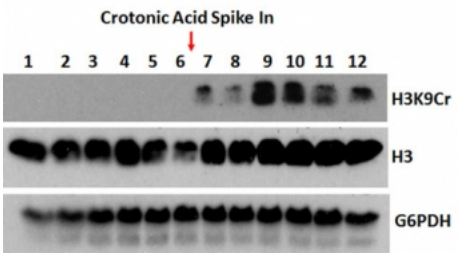
H3K9cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody [clone RM339] (R20362)

Catalog No.	Formulation	Size
R20362-100UG	1 mg/ml in PBS with 50% glycerol, 1% BSA and 0.09% sodium azide	100 ug

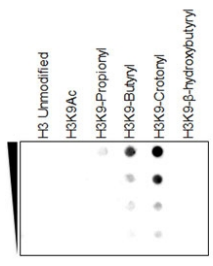
Recombinant RABBIT MONOCLONAL

Bulk quote request

Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Host	Rabbit
Clonality	Recombinant Rabbit Monoclonal
Isotype	Rabbit IgG
Clone Name	RM339
Purity	Protein A purified from animal origin-free supernatant
UniProt	P84243
Applications	Western Blot : 1ug/ml-5ug/ml Dot Blot : 0.5ug/ml-2ug/ml
Limitations	This H3K9cr antibody is available for research use only.



H3K9cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody (clone RM339) for WB. Western blot analysis of HIST1H3A / Histone H3 Lys9 crotonylation (H3K9cr) in cells treated with a crotonylation-inducing metabolite using H3K9cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody. Increased H3K9cr signal is observed following metabolite treatment, consistent with metabolically driven chromatin activation. Total Histone H3 and G6PDH are included as controls, confirming equal loading and supporting selective detection of the crotonylated H3K9 state.



H3K9cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody (clone RM339) specificity analysis. Peptide dot blot demonstrating selective recognition of HIST1H3A / Histone H3 Lys9 crotonylation (H3K9cr). Strong signal is observed exclusively with the K9 crotonylated peptide, while minimal to no reactivity is detected with unmodified H3, acetylated Lys9, propionylated, butyrylated, or beta-hydroxybutyrylated peptides, confirming high specificity for the crotonylated Lys9 modification and distinguishing it from other lysine acylation states.

Description

Histone H3 (HIST1H3A) lysine 9 crotonylation (H3K9cr) is an emerging post-translational modification that expands the regulatory landscape of chromatin beyond classical acetylation and methylation. As part of a broader class of lysine acylations, crotonylation introduces a chemically distinct modification that directly links cellular metabolic state to chromatin function and gene expression. H3K9cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody (clone RM339) is designed to detect Histone H3 crotonylated at lysine 9, enabling investigation of this non-canonical epigenetic mark. 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 H3K9cr antibody in the literature, specifically recognizes lysine 9 when modified by a crotonyl group while excluding other acylations and methylation states. This distinction is critical because crotonylation, although structurally related to acetylation, exhibits unique biochemical and regulatory properties that cannot be inferred from acetylation alone.

This recombinant rabbit monoclonal clone RM339 antibody is uniquely positioned for studies of metabolic-epigenetic coupling. Histone crotonylation is regulated by intracellular levels of crotonyl-CoA, a metabolite generated through fatty acid metabolism and amino acid catabolism. Fluctuations in crotonyl-CoA availability directly influence chromatin modification patterns, establishing a mechanistic link between cellular metabolism and transcriptional regulation.

At the molecular level, the crotonyl group differs from the acetyl group in both size and electronic structure, featuring a planar conformation and extended conjugation. These properties alter the interaction landscape of histone tails with chromatin-binding proteins, often enhancing transcriptional activation beyond that observed with acetylation. As a result, crotonylation is increasingly recognized as a potent activating mark with distinct regulatory capabilities.

H3K9cr occupies a unique position within the lysine 9 modification spectrum. While H3K9 methylation is associated with heterochromatin formation and transcriptional repression, and H3K9 acetylation promotes chromatin accessibility and gene activation, crotonylation represents a metabolically sensitive activation mark that reflects cellular energetic and biochemical state. This positions H3K9cr as a key integrator of metabolic signaling and chromatin regulation.

Functionally, H3K9cr has been observed at promoters and regulatory regions associated with active transcription and dynamic gene expression programs. It is particularly enriched in contexts such as spermatogenesis, inflammatory signaling, and metabolic adaptation, where rapid and coordinated changes in gene expression are required. Its presence often correlates with high transcriptional activity and enhanced chromatin accessibility.

Importantly, crotonylation participates in a broader network of histone modification cross-talk. It can coexist with other activating marks or compete with acetylation at the same lysine residue, introducing an additional layer of regulatory complexity. This interplay contributes to fine-tuning of transcriptional output and chromatin state transitions.

Unlike antibodies targeting acetylation or methylation alone, this antibody enables selective detection of crotonylation-specific chromatin pathways. It provides a critical tool for distinguishing metabolically driven chromatin activation from classical epigenetic regulation.

At the cellular level, Histone H3 crotonylated at lysine 9 localizes to the nucleus and is enriched in transcriptionally active chromatin regions. Its distribution reflects dynamic regulation influenced by metabolic flux, signaling pathways, and cellular context.

This antibody supports detection of Histone H3 lysine 9 crotonylation, enabling investigation of chromatin activation, metabolic-epigenetic interactions, and emerging regulatory mechanisms that extend beyond traditional histone modification paradigms.

Application Notes

The stated application concentrations are suggested starting points. Titration of the recombinant H3K9cr antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

A crotonyl-peptide corresponding to Crotonyl-Histone H3 (Lys9) was used as the immunogen for the H3K9cr Antibody / HIST1H3A Crotonylation Chromatin Activation Antibody.

Storage

Store the recombinant H3K9cr antibody at -20oC.

Alternate Names

Histone H3 Lys9 crotonylation antibody, H3K9cr chromatin antibody, crotonyl histone H3 Lys9 antibody, H3 K9 crotonylation antibody