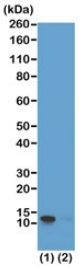
Phospho-Histone H4 Antibody (pSer1) / Histone H4 Serine 1 Phosphorylation DNA Damage Antibody [clone RM194] (R20222)

Catalog No.	Formulation	Size
R20222-100UG	1 mg/ml in PBS with 50% glycerol, 1% BSA and 0.09% sodium azide	100 ug
R20222-25UG	1 mg/ml in PBS with 50% glycerol, 1% BSA and 0.09% sodium azide	25 ug

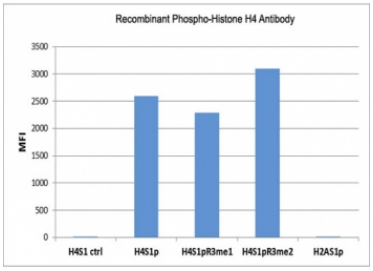
Recombinant RABBIT MONOCLONAL

Bulk quote request

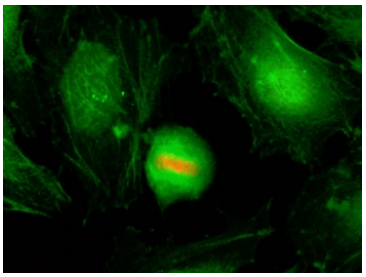
Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Host	Rabbit
Clonality	Recombinant Rabbit Monoclonal
Isotype	Rabbit IgG
Clone Name	RM194
Purity	Protein A purified from animal origin-free supernatant
UniProt	P62805
Gene ID	121504
Applications	Western blot: 0.5-2ug/ml Immunocytochemistry: 1-2ug/ml ELISA: 0.2-1ug/ml
Limitations	This recombinant phospho-Histone H4 antibody is available for research use only.



Phospho-Histone H4 Antibody (pSer1) for WB. Western blot analysis of histone H4 serine 1 phosphorylation in chromatin samples. Lane 1: acid extract of human HeLa cells, Lane 2: recombinant histone H4 protein. A band is detected at approximately 11 kDa, consistent with the predicted molecular weight of Histone H4 (HIST1H4). The signal in HeLa cells reflects endogenous phosphorylation at serine 1, a DNA damage-associated chromatin modification linked to early chromatin remodeling and genome surveillance pathways.



Phospho-Histone H4 Antibody (pSer1) specificity. Peptide binding analysis demonstrating selective recognition of histone H4 serine 1 phosphorylation. Strong signal is observed for H4S1p peptides, including variants containing neighboring arginine 3 methylation (H4S1pR3me1 and H4S1pR3me2), indicating that detection of serine 1 phosphorylation is not affected by adjacent modifications. No detectable reactivity is observed toward control peptide (H4S1 ctrl) or histone H2A serine 1 phosphorylation (H2AS1p). These results confirm high specificity of the antibody for DNA damage-associated phosphorylated histone H4.



Phospho-Histone H4 Antibody (pSer1) for IF. Immunofluorescence analysis of histone H4 serine 1 phosphorylation in human HeLa cells using Phospho-Histone H4 Antibody (pSer1) (red). Predominant nuclear staining is observed, consistent with localization of phosphorylated histone H4 (HIST1H4) within chromatin during DNA damage-associated chromatin remodeling. Actin filaments are labeled with fluorescein phalloidin (green), and nuclei are visualized with DAPI (blue), highlighting nuclear enrichment of this early chromatin signaling modification.

Description

Histone H4 (HIST1H4) is a core nucleosomal histone whose phosphorylation at serine 1 (H4 pSer1) represents a rapid and early chromatin signaling event in response to DNA damage and cellular stress. Phospho-Histone H4 Antibody (pSer1) (clone RM194) detects this modification, which occurs at the extreme N-terminus of histone H4 and directly influences chromatin accessibility during genome surveillance and repair. Unlike acetylation or methylation marks that define relatively stable chromatin states, serine 1 phosphorylation functions as a dynamic signal that marks chromatin undergoing active DNA damage response. 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.

H4 pSer1 antibody, also referred to as phospho Histone H4 serine 1 antibody or HIST1H4 phosphorylation antibody in the literature, is widely used to study early chromatin responses to genotoxic stress. Phosphorylation at serine 1 is mediated by stress-responsive kinases, including pathways linked to ATM and ATR signaling, and is rapidly induced following DNA damage. This modification serves as a molecular switch that promotes chromatin relaxation at sites requiring repair, distinguishing it from structural chromatin marks associated with compaction or long-term regulation.

Mechanistically, phosphorylation at serine 1 introduces a negative charge at the histone H4 N-terminal tail, altering its interaction with negatively charged DNA and adjacent nucleosomes. This reduces histone-DNA affinity and disrupts inter-nucleosomal contacts, leading to localized chromatin decondensation. These structural changes are essential for enabling DNA repair machinery to access damaged DNA regions efficiently. As a result, H4 pSer1 is closely associated with chromatin remodeling events that occur immediately following DNA damage rather than steady-state chromatin organization.

The histone H4 tail plays a central role in nucleosome stability and chromatin fiber interactions, and modification at serine 1 uniquely affects these interactions at the earliest stages of chromatin response. This positions H4 serine 1 phosphorylation as a marker of acute chromatin signaling, particularly in contrast to lysine-based modifications that regulate transcription, chromatin assembly, or higher-order structure over longer timescales.

H4 pSer1 is also linked to coordination of downstream chromatin modifications, acting in concert with other histone marks to regulate recruitment of DNA repair complexes. This crosstalk between phosphorylation and other histone modifications contributes to precise control of chromatin accessibility during genome maintenance. Dysregulation of these signaling pathways has been associated with impaired DNA repair capacity and increased genomic instability in disease states, including cancer.

A recombinant rabbit monoclonal antibody such as clone RM194 enables specific detection of histone H4 serine 1

phosphorylation in studies focused on DNA damage signaling, chromatin remodeling under stress conditions, and early-stage chromatin response mechanisms.

Chromatin organization and epigenetic pathway studies may also benefit from our Histone H4 antibody targeting core nucleosome structure and nuclear chromatin biology.

Application Notes

The stated application concentrations are suggested starting points. Titration of the Phospho-Histone H4 Antibody (pSer1) / Histone H4 Serine 1 Phosphorylation DNA Damage Antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

A phospho-peptide corresponding to phospho-Histone H4 (pSer1) was used as the immunogen for this Phospho-Histone H4 Antibody (pSer1) / Histone H4 Serine 1 Phosphorylation DNA Damage Antibody.

Storage

Store the recombinant phospho-Histone H4 antibody at -20oC (with glycerol) or aliquot and store at -20oC (without glycerol).

Alternate Names

H4 pSer1 antibody, Phospho Histone H4 Ser1 antibody, HIST1H4 phosphorylation antibody, H4 DNA damage phosphorylation antibody

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