

PRODUCT INFORMATION



Histone H3 (human, recombinant; PAD2 citrullinated)

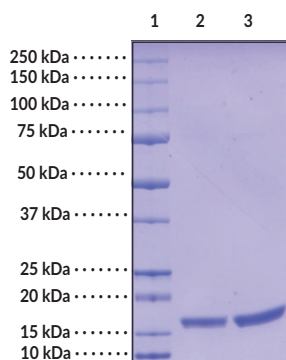
Item No. 44508

Overview and Properties

Source: Recombinant human histone H3 expressed in *E. coli* and citrullinated by PAD2
Amino Acids: 1-136 (full length)
Uniprot No.: P68431
Molecular Weight: 15.5 kDa
Storage: -80°C (as supplied)
Stability: ≥18 months
Purity: ≥90% estimated by SDS-PAGE
Supplied in: A solution in PBS, pH 7.4

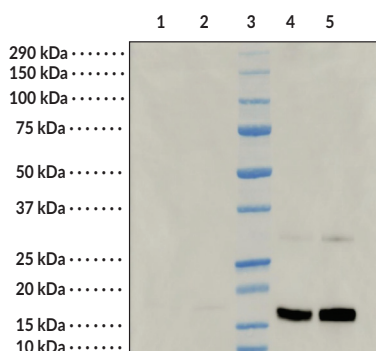
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



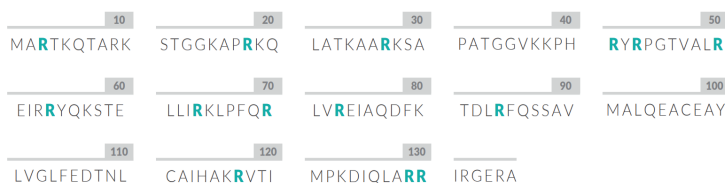
Lane 1: MW Markers
 Lane 2: Histone H3 (PAD2 Citrullinated) (2 µg)
 Lane 3: Histone H3 (PAD2 Citrullinated) (4 µg)

SDS-PAGE analysis of citrullinated histone H3.



Lane 1: Histone H3 (100 ng)
 Lane 2: Histone H3 (200 ng)
 Lane 3: Standard
 Lane 4: Citrullinated Histone H3 (100 ng)
 Lane 5: Citrullinated Histone H3 (200 ng)

Analysis of Histone H3 citrullination. Histone H3 and citrullinated histone H3 were reacted with Cayman's Citrulline-specific Probe-biotin (Item No. 17450) and detected using Streptavidin-HRP (Item No. 16747).



Identification of modified sites in Histone H3 (human, recombinant; PAD2 citrullinated) (Item No. 44508). Citrullinated Histone H3 was detected by LC-MS/MS and analyzed using Mascot and Scaffold PTM software. Deiminated arginines are indicated in teal.

Citrullination sites shown are representative of typical results. Batch-to-batch variations may occur.

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

Histone H3 is a nuclear protein and a component of the nucleosome core that is essential for organizing genomic DNA in eukaryotic nuclei.¹ 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, including citrullination. Histone H3 is subject to citrullination of arginine residues by peptidyl arginine deiminase 2 (PAD2) at positions 2, 8, 17, and 26, and this citrullination blocks methylation of these residues by protein-arginine methyltransferase 4 (PRMT4) and induces transcriptional repression of target genes. Citrullinated histone H3 is a component of neutrophil extracellular traps (NETs) that acts as an autoantigen to induce the production of anti-citrullinated protein antibodies associated with various diseases such as sepsis, multiple sclerosis, rheumatoid arthritis, and multiple myeloma.¹⁻⁴ Increased PAD2-mediated citrullination of histone H3 is associated with tumor cell proliferation in cancer.⁵ Cayman's Citrullinated Histone H3 (human, recombinant; PAD2 citrullinated) protein is derived from purified Histone H3 (human, recombinant) (Item No. 10263) that has been modified by PAD2 (Item No. 10785), which is removed by affinity chromatography after the reaction.

References

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2. Li, Y., Liu, Z., Liu, B., et al. Citrullinated histone H3: A novel target for the treatment of sepsis. *Surgery* **156**(2), 229-234 (2014).
3. Moscarello, M.A., Mastronardi, F.G., and Wood, D.D. The role of citrullinated proteins suggests a novel mechanism in the pathogenesis of multiple sclerosis. *Neurochem. Res.* **32**(2), 251-256 (2007).
4. McNee, G., Eales, K.L., Wei, W., et al. Citrullination of histone H3 drives IL-6 production by bone marrow mesenchymal stem cells in MGUS and multiple myeloma. *Leukemia* **31**(2), 373-381 (2017).
5. Zhu, D., Zhang, Y., and Wang, S. Histone citrullination: A new target for tumors. *Mol. Cancer* **20**(1), 90 (2021).

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