

# PRODUCT INFORMATION



## Citrullinated Histone H3 (human, recombinant)

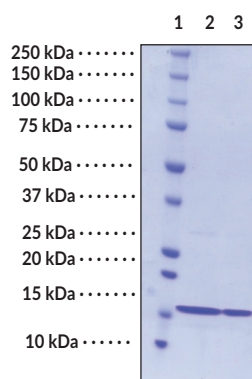
Item No. 17926

### Overview and Properties

**Synonym:** H3, H3C1, Histone H3.1  
**Source:** Recombinant protein expressed in *E. coli*, citrullinated with recombinant human PAD4  
**Uniprot No.:** P68431  
**Molecular Weight:** 15.5 kDa  
**Storage:** -80°C (as supplied)  
**Stability:** ≥1 year  
**Purity:** ≥95% estimated by SDS-PAGE  
**Supplied in:** A solution in PBS, pH 7.4  
**Applications:** Immunoreactive with anti-citrulline antibodies by Western blot and ELISA

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

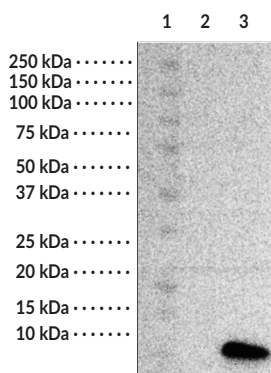
### Images



Lane 1: MW Markers  
Lane 2: Histone H3 (PAD4 Citrullinated) (4 µg)  
Lane 3: Histone H3 (PAD4 Citrullinated) (2 µg)

SDS-PAGE analysis of citrullinated histone H3.

Representative gel image shown; actual purity may vary between each batch.



Lane 1: MW Markers  
Lane 2: Histone H3 (4 µg)  
Lane 3: Histone H3 (PAD4 Citrullinated) (4 µg)

**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).

Representative image shown.



Identification of modified sites in Citrullinated Histone H3 (Item No. 17926). 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

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A nucleosome is the basic repeating unit of chromatin in which 146 base pairs of DNA wrap twice around a histone octamer consisting of two copies of each of the core histones, H2A, H2B, H3, and H4.<sup>1</sup> The combination of two H2A/H2B dimers and one H3/H4 tetramer create the nucleosome core.<sup>2</sup> Histone H3 undergoes many modifications which include acetylation, methylation, and phosphorylation that are important for regulation of gene transcription.<sup>1</sup> Citrullination is another important post-translational modification that is catalyzed by peptidylarginine deiminase 4 (PAD4) and PAD2. Hypercitrullination of histones leads to the development of neutrophil extracellular traps (NETs), which are a part of the inflammatory response.<sup>3,4</sup> Neutrophils release these NETs to trap and eradicate bacteria and fungi. Failure to clear citrullinated proteins and NET components following inflammation can result in the production of autoantibodies and anti-citrullinated protein antibodies.<sup>5</sup> The persistence of these antibodies and citrullinated proteins is associated with a number of human diseases including rheumatoid arthritis, systemic lupus erythematosus, Alzheimer's disease, and multiple sclerosis.<sup>6</sup> This product contains purified Histone H3 (human, recombinant) (Item No. 10263) that has been modified with PAD4 enzyme, which is removed by affinity chromatography after the reaction.

## References

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1. Bhaumik, S. R., Smith, E., and Shilatifard, A. Covalent modifications of histones during development and disease pathogenesis. *Nat. Struct. Mol. Biol.* **14(11)**, 1008-1016 (2007).
2. Tanaka, Y., Tawaramoto-Sasanuma, M., Kawaguchi, S., *et al.* Expression and purification of recombinant human histones. *Methods* **33**, 3-11 (2004).
3. Baka, Z., György, B., Géher, P., *et al.* Citrullination under physiological and pathological conditions. *Joint Bone Spine* **79**, 431-436 (2012).
4. Neeli, I. and Radic, M. Knotting the NETs: Analyzing histone modifications in neutrophil extracellular traps. *Arthritis Res. Ther.* **14(2)**, 1-2 (2012).
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6. Horibata, S., Coonrod, S. A., and Cherrington, B. D. Role for peptidylarginine deiminase enzymes in disease and female reproduction. *J. Reprod. Dev.* **58(3)**, 274-282 (2012).

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