PRODUCT INFORMATION

Citrullinated Histone H2B (human, recombinant)

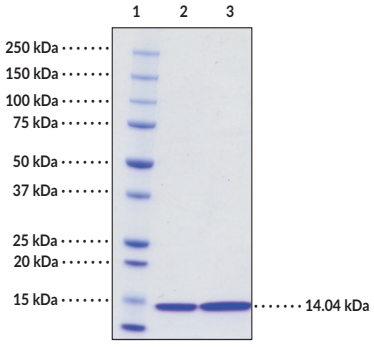
Item No. 30133

Overview and Properties

Synonyms:	H2BC1, HIST1H2BA, hTSH2B, TH2B, TSH2B.1
Source:	Recombinant human histone H2B type 1-A expressed in *E. coli*, citrullinated with human recombinant PAD4
Amino Acids:	2-127 (full length)
Uniprot No.:	Q96A08
Molecular Weight:	14.04 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	***batch specific*** (≥90% estimated by SDS-PAGE)
Supplied in:	Water
Protein Concentration:	***batch specific*** mg/ml

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

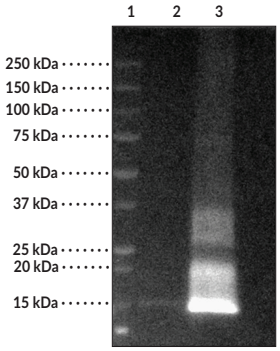
Images



Lane 1: MW Markers
Lane 2: Citrullinated Histone H2B (2 µg)
Lane 3: Citrullinated Histone H2B (4 µg)

SDS-PAGE analysis of Citrullinated Histone H2B.

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



Lane 1: MW Markers
Lane 2: Histone H2B (2 µg)
Lane 3: Citrullinated Histone H2B (4 µg)

Analysis of Histone H2B Citrullination.
Histone H2B and citrullinated histone H2B were reacted with Cayman's Citrulline-specific Probe-biotin (Item No. 17450) and detected using Streptavidin:HRP (Item No. 16747).

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

Identification of modified sites in Citrullinated Histone H2B (Item No. 30133). Citrullinated Histone H2B 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.

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Description

Citrullinated Histone H2B Type 1-A is a citrullinated form of human histone H2B type 1-A (hTSH2B), a testis- and sperm-specific variant of the histone H2B protein that is encoded by *H2BC1*, previously known as *HIST1H2BA*.[1,2] hTSH2B shares 85% identity with human somatic H2B.1, with the majority of amino acid differences between hTSH2B and somatic H2B occurring at the N-terminal end of the protein.[1] *H2BC1* is expressed in testis, and protein levels of hTSH2B are elevated in early round spermatids, decreasing over the course of spermiogenesis, with hTSH2B present in approximately 20% of mature spermatozoa.[1,3] hTSH2B is enriched at promoter regions of genes important for sperm biology, capacitation, and fertilization and localizes to the basal nuclear area in mature spermatozoa.[1,4] When incubated in *Xenopus* egg extracts, hTSH2B-positive human sperm cells decondense more rapidly and have increased long nuclear axis lengths compared with hTSH2B-negative sperm cells.[5] Mice lacking the genes encoding the murine homolog of hTSH2B (TH2B), as well as the histone variant TH2A (*Th2a*$^{-/-}$*Th2b*$^{-/-}$ mice), are sterile and have spermatogenesis defects.[6] This product contains purified histone H2B type 1-A (human, recombinant) (Item No. 11081) that has been modified with PAD4 enzyme, which is subsequently depleted by affinity chromatography. Cayman's Citrullinated Histone H2B Type 1-A (human, recombinant) can be used for Western blot and ELISA applications.

References

1. Zalensky, A.O., Siino, J.S., Gineitis, A.A., *et al.* Human testis/sperm-specific histone H2B (hTSH2B). Molecular cloning and characterization. *J. Biol. Chem.* **277(45)**, 43474-43480 (2002).
2. Marzluff, W.F., Gongidi, P., Woods, K.R., *et al.* The human and mouse replication-dependent histone genes. *Genomics* **80(5)**, 487-498 (2002).
3. van Roijen, H.J., Ooms, M.P., Spaargaren, M.C., *et al.* Immunoexpression of testis-specific histone 2B in human spermatozoa and testis tissue. *Hum. Reprod.* **13(6)**, 1559-1566 (1998).
4. Hammoud, S.S., Nix, D.A., Zhang, H., *et al.* Distinctive chromatin in human sperm packages genes for embryo development. *Nature* **460(7254)**, 473-478 (2009).
5. Singleton, S., Mudrak, O., Morshedi, M., *et al.* Characterisation of a human sperm cell subpopulation marked by the presence of the TSH2B histone. *Reprod. Fertil. Dev.* **19(2)**, 392-397 (2007).
6. Shinagawa, T., Huynh, L.M., Takagi, T., *et al.* Disruption of *Th2a* and *Th2b* genes causes defects in spermatogenesis. *Development* **142(7)**, 1287-1292 (2015).

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