PRODUCT INFORMATION

HDAC4 (human, recombinant)

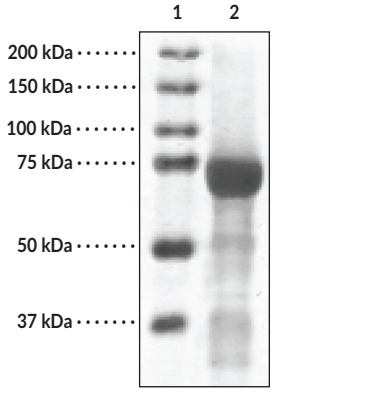
Item No. 10009652

Overview and Properties

Synonym:	Histone Deacetylase 4
Source:	Active recombinant human N-terminal GST-tagged HDAC4 catalytic domain expressed in insect cells
Amino Acids:	627-1,085
Uniprot No.:	P56524
Molecular Weight:	75.2 kDa
Storage:	-80°C (as supplied)
Stability:	≥6 months
Purity:	≥60% estimated by SDS-PAGE
Supplied in:	45 mM Tris-HCl, pH 8.0, with 124 mM sodium chloride, 2.4 mM potassium chloride, 18 mM glutathione, and 10% glycerol
Protein Concentration:	***batch specific*** mg/ml
Activity:	***batch specific*** U/ml
Specific Activity:	***batch specific*** U/mg
Unit Definition:	One unit is the amount of enzyme required to release 1 pmol of acetate per minute at 37°C in 25 mM Tris/HCl, pH 8.0, 137 mM sodium chloride, 2.7 mM potassium chloride, 1 mM $MgCl_2$, 0.1 mg/ml BSA, and 20 µM fluorogenic HDAC class 2a substrate.

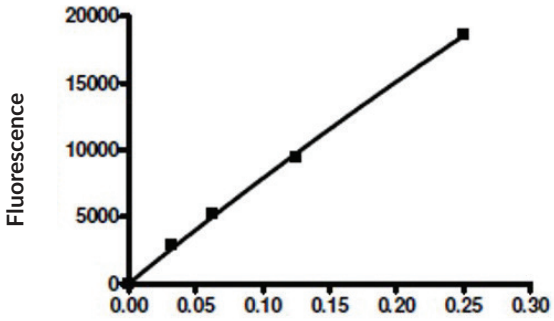
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: HDAC4 (5 µg)

SDS-PAGE Analysis of HDAC4



HDAC4 Deacetylase Activity

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Description

Histone deacetylase 4 (HDAC4) is a zinc-dependent metalloenzyme and class IIa HDAC.[1] It is composed of an N-terminal regulatory domain, which contains a myocyte-specific enhancer factor 2 (MEF2) binding site, three 14-3-3 binding sites, a nuclear localization signal, and a caspase-3 cleavage site, a catalytic domain, and a C-terminal domain that contains a nuclear export signal. HDAC4 shuttles between the cytoplasm and nucleus and is mainly expressed in skeletal muscle, brain, ovaries, and colon but is also found in the small intestine, heart, kidney, testis, thymus, and leukocytes.[2,3] It acts as a transcriptional corepressor and has many binding partners, including the transcription factors MEF2 and RUNX family transcription factor 2 (RUNX2).[1,4] Knockout of *Hdac4* induces premature ossification and chondrocyte hypertrophy in mice.[4] Mutations in *HDAC4* are associated with brachydactyly-mental retardation syndrome, a disorder characterized by brachydactyly type E, intellectual disability, and facial dysmorphisms.[5] Cayman's HDAC4 (human, recombinant) protein can be used for enzyme activity assays.

References

1. Yang, X.J. and Grégoire, S. Class II histone deacetylases: From sequence to function, regulation, and clinical implication. *Mol. Cell. Biol.* **25(8)**, 2873-2884 (2005).
2. Wang, A.H., Kruhlak, M.J., Wu, J., *et al.* Regulation of histone deacetylase 4 by binding of 14-3-3 proteins. *Mol. Cell. Biol.* **20(18)**, 6904-6912 (2000).
3. Wang, A.H., Bertos, N.R., Vezmar, M., *et al.* HDAC4, a human histone deacetylase related to yeast HDA1, is a transcriptional corepressor. *Mol. Cell. Biol.* **19(11)**, 7816-7827 (1999).
4. Vega, R.B., Matsuda, K., Oh, J., *et al.* Histone deacetylase 4 controls chondrocyte hypertrophy during skeletogenesis. *Cell* **119(4)**, 555-566 (2004).
5. Wakeling, E., McEntagart, M., Bruccoleri, M., *et al.* Missense substitutions at a conserved 14-3-3 binding site in HDAC4 cause a novel intellectual disability syndrome. *HGG Adv.* **2(1)**, 100015 (2021).

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