Revision 1

Store at -20C
#3424

Phospho-HDAC4 (Ser632)/HDAC5 (Ser661)/HDAC7 (Ser486) Antibody

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source:	UniProt ID:	Entrez-Gene Id:
WB, IP	H M	Endogenous	140, 124, 120	Rabbit	#P56524, #Q9UQL6, #Q8WUI4	9759, 10014, 51564

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:25

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at –20°C. Do not aliquot the antibody.

Specificity / Sensitivity

Phospho-HDAC4 (Ser632)/HDAC5 (Ser661)/HDAC7 (Ser486) Antibody recognizes endogenous levels of HDAC4, HDAC5 and HDAC7 proteins when phosphorylated on Ser632, Ser661 and Ser486, respectively. The antibody may recognize HDAC4 phosphorylated at Ser467 and HDAC5 phosphorylated at Ser498. The antibody also crossreacts with an unidentified protein at 80 kDa.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to human HDAC7 protein phosphorylated on Ser486. Antibodies are purified by protein A and peptide affinity chromatography.

Background

Acetylation of the histone tail causes chromatin to adopt an "open" conformation, allowing increased accessibility of transcription factors to DNA. The identification of histone acetyltransferases (HATs) and their large multiprotein complexes has yielded important insights into how these enzymes regulate transcription (1,2). HAT complexes interact with sequence-specific activator proteins to target specific genes. In addition to histones, HATs can acetylate nonhistone proteins, suggesting multiple roles for these enzymes (3). In contrast, histone deacetylation promotes a "closed" chromatin conformation and typically leads to repression of gene activity (4). Mammalian histone deacetylases can be divided into three classes on the basis of their similarity to various yeast deacetylases (5). Class I proteins (HDACs 1, 2, 3, and 8) are related to the yeast Rpd3-like proteins, those in class II (HDACs 4, 5, 6, 7, 9, and 10) are related to yeast Hda1-like proteins, and class III proteins are related to the yeast protein Sir2. Inhibitors of HDAC activity are now being explored as potential therapeutic cancer agents (6,7).
Histone deacetylases (HDACs) interact with an increasing number of transcription factors, including myocyte enhancer factor 2 (MEF2), to negatively regulate gene expression. HDACs are regulated in part by shuttling between the nucleus and cytoplasm, where export to the cytoplasm facilitates gene activation by removing HDACs from their target genes (8,9). The cytoplasmic export is facilitated by 14-3-3 proteins, which bind to specific phospho-serine residues on the HDAC proteins (8,9). These phospho-serine 14-3-3 binding modules are highly conserved between HDAC proteins, allowing for their collective regulation in response to specific cell stimuli. For example, the highly conserved HDAC 4 Ser632, HDAC 5 Ser498 and HDAC 7 Ser486 residues are all phosphorylated by CAMK and PKD kinases in response to multiple cell stimuli, including VEGF-induced angiogenesis in endothelial cells, B cell and T cell activation, and differentiation of myoblasts into muscle fiber (10-14).

Background References

1. Marmorstein, R. (2001) *Cell Mol Life Sci* 58, 693-703.
2. Gregory, P.D. et al. (2001) *Exp Cell Res* 265, 195-202.
3. Liu, Y. et al. (2000) *Mol Cell Biol* 20, 5540-53.
4. Cress, W.D. and Seto, E. (2000) *J Cell Physiol* 184, 1-16.
5. Gray, S.G. and Ekström, T.J. (2001) *Exp Cell Res* 262, 75-83.
6. Thiagalingam, S. et al. (2003) *Ann. N.Y. Acad. Sci.* 983, 84-100.
7. Vigushin, D.M. and Coombes, R.C. (2004) *Curr Cancer Drug Targets* 4, 205-18.
8. Grozinger, C.M. and Schreiber, S.L. (2000) *Proc Natl Acad Sci USA* 97, 7835-40.
9. Wang, A.H. et al. (2000) *Mol Cell Biol* 20, 6904-12.
10. Ha, C.H. et al. (2008) *J Biol Chem* 283, 14590-9.
11. Wang, S. et al. (2008) *Proc Natl Acad Sci U S A* 105, 7738-43.
12. Matthews, S.A. et al. (2006) *Mol Cell Biol* 26, 1569-77.
13. Parra, M. et al. (2005) *J Biol Chem* 280, 13762-70.

14. McKinsey, T.A. et al. (2000) *Nature* 408, 106-11.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

WB: Western Blotting **IP:** Immunoprecipitation

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster **X:** Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse **GP:** Guinea Pig **Rab:** rabbit **All:** all species expected

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Limited Uses