Histone Deacetylase 2 (HDAC2) Rabbit Polyclonal Antibody

Cat# CY-P1012

100 µg (1 mg/ml x 100 µL)

Clone Name	Applications	Species Cross-Reactivity	Molecular Wt.	Source Isotype
	WB, IP	H, M	58 kDa	Rabbit IgG

Background

The histone tail acetylation promotes transcriptional activation. 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 and target specific genes. In addition to histones, some HATs can acetylate nonhistone proteins, suggesting multiple roles for these enzymes (3). In another respect, histone deacetylation is involved in silencing of gene transcription (4). Mammalian histone deacetylases can be divided into two classes on the basis of their similarity to various yeast histone deacetylases (5). The first class is represented by its closeness to the yeast Rpd3-like proteins (HDAC1, 2, 3 and 8), and the second class, which has similarities to yeast Hda1-like proteins (HDAC4, 5, 6 and 7)

Specificity/Sensitivity: Histone Deacetylase 2 (HDAC2) Antibody detects endogenous levels of HDAC2 protein. The antibody does not cross-react with other HDAC proteins.

Source/Purification: Polyclonal antibody is produced by immunizing rabbit with a synthetic HDAC2 peptide derived from the carboxy-terminal sequence of human HDAC2. IgG is purified by protein A Sepharose chromatography.

Recommended Antibody Dilutions: Western blotting: 1-2 µg/mL, Immunoprecipitation: 2-4 µg /sample

Storage: Supplied in 20 mM phosphate buffer (pH 7.5), 300 mM NaCl, 50 % glycerol. Store at -20°C.

Applications Key: WB: Western **IP:**Immunoprecipitation **IHC:**Immunohistochemistry **IC:**Immunocytochemistry **F:**Flow cytometry **E:**ELISA **FP:**Fluorescence Polarization assay
Species Cross-Reactivity Key: H:human **M:**mouse **R:**rat **Hm:**hamster **Mk:**monkey **Mi:**mink **C:**chicken **X:***Xenopus* **Z:**zebra fish **All:**all species expected Species enclosed in parentheses are predicted to react based on 100% sequence homology.

General References:

1. Marmorstein, R. et al. (2001) Cell. Mol. Life Sci. 58, 693–703.
2. Gregory, P.D. et al. (2001) Exp. Cell Res. 265, 195–202.
2. Liu, Y. et al. (2000) Mol. Cell. Biol. 20, 5540–5543.
4. Cress, S.D. and Seto, E. (2000) J. Cell. Physiol. 184, 1–16.
5. Gray, S.G. and Ekstrom, T.J. (2001) Exp. Cell Res. 262, 75–83.

Fig.1 Western blot analysis of HDAC2

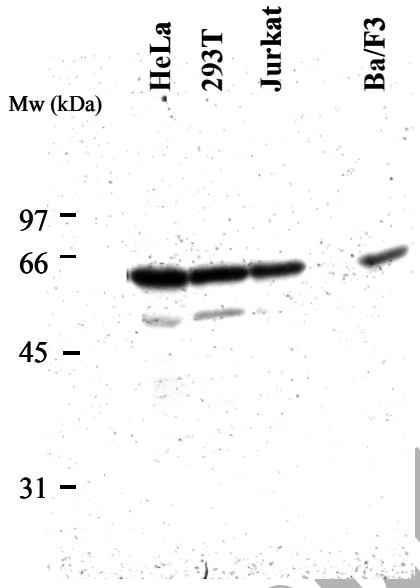
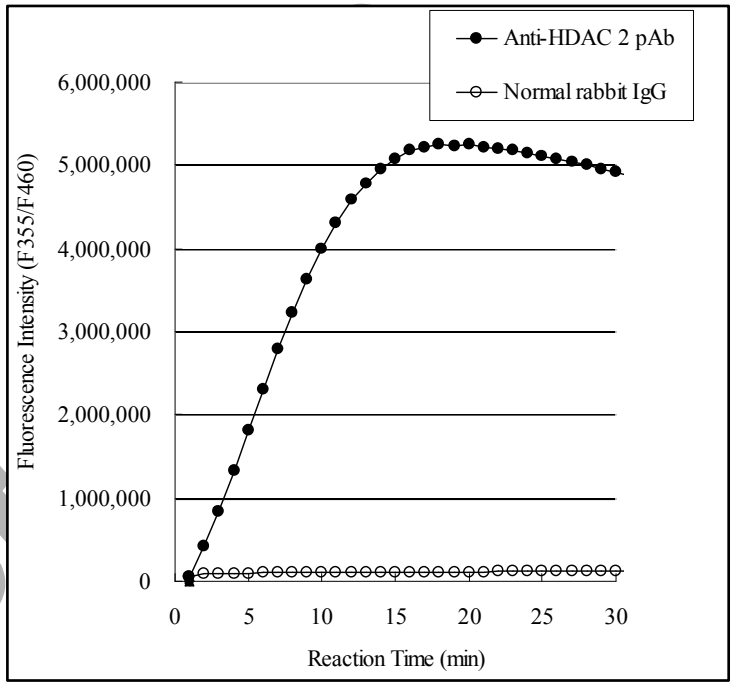


Fig.2 Measurement of HeLa cell endogenous HDAC2 in immunoprecipitate using anti-HDAC2 antibody by means of CycLex HDAC Assay kit



Western Immunoblotting Protocol

Solutions and Reagents
Note: Prepare solutions with Milli-Q or equivalently purified water.

Transfer Buffer: 25 mM Tris base, 0.2 M glycine, 20% methanol (pH 8.5)
SDS Sample Buffer (1X): 62.5 mM Tris-HCl (pH 6.8 at 25°C), 2% w/v SDS, 10% glycerol, 50 mM DTT, 0.01% w/v bromophenol blue or phenol red
Blocking Buffer: 1X TBS, 0.1% Tween-20 with 5% w/v nonfat dry milk; for 150 ml, add 15 ml 10X TBS to 135 ml water, mix. Add 7.5 g nonfat dry milk and mix well. While stirring, add 0.15 ml Tween-20 (100%).
10X TBS (Tris-buffered saline): To prepare 1 liter of 10X TBS: 24.2 g Tris base, 80 g NaCl; adjust pH to 7.6 with HCl (use at 1X).
Primary Antibody Dilution Buffer: 1X TBS, 0.1% Tween-20 with 5% blocking agent; for 20 ml, add 2 ml 10X TBS to 18 ml water, mix. Add 1.0 g BSA and mix well. While stirring, add 20 µl Tween-20 (100%).
Chemiluminescent HRP Detection: secondary anti-rabbit antibody conjugated to horseradish peroxidase (HRP), ECL™ chemiluminescent reagent (Amersham Pharmacia)
Wash Buffer TBS/T: 1X TBS, 0.1% Tween-20
Blotting Membrane: This protocol has been optimized for nitrocellulose membranes, which we recommend. PVDF membranes may also be used.

Protein Blotting
A general protocol for sample preparation is described below.

1. Treat cells by adding fresh media containing regulator for desired time.
2. Aspirate media from cultures; wash cells with 1X PBS; aspirate.
3. Lyse cells by adding 1X SDS Sample Buffer (100 µl per well of 6-well plate or 500 µl per plate of 10 cm2 plate). Immediately scrape the cells off the plate and transfer the extract to a microcentrifuge tube. Keep on ice.
4. Sonicate for 10–15 seconds to shear DNA and reduce sample viscosity.
5. Heat a 20 µl sample to 95–100°C for 5 minutes; cool on ice.
6. Microcentrifuge for 5 minutes.
7. Load 20 µl onto SDS-PAGE gel (10 cm x 10 cm).
8. Electrotransfer to nitrocellulose membrane.

Membrane Blocking and Antibody Incubations
Note: Volumes are for 10 cm x 10 cm (100 cm2) of membrane; for different sized membranes, adjust volumes accordingly.

1. (Optional) After transfer, wash nitrocellulose membrane with 25 ml TBS for 5 minutes at room temperature.
2. Incubate membrane in 25 ml of Blocking Buffer for 1 hour at room temperature.
3. Wash 3 times for 5 minutes each with 15 ml of TBS/T.
4. Incubate membrane and primary antibody (at the appropriate dilution) in 10 ml Primary Antibody Dilution Buffer with gentle agitation overnight at 4°C.
5. Wash 3 times for 5 minutes each with 15 ml of TBS/T.
6. Incubate membrane with HRP-conjugated secondary antibody (1:3000 in 10 ml of Blocking Buffer with gentle agitation for 1 hour at room temperature.
7. Wash 3 times for 5 minutes each with 15 ml of TBS/T.

Detection of Proteins

1. Incubate membrane with 4 ml ECL™ with gentle agitation for 1 minute at room temperature.
2. Drain membrane of excess developing solution, do not let dry, wrap in plastic wrap and expose to x-ray film. An initial tensecond exposure should indicate the proper exposure time.

Immunoprecipitation Followed by Western Immunoblotting Protocol

Solutions and Reagents

Note: Prepare solutions with Milli-Q or equivalently purified water.

Cell Lysis Buffer (1X): 20 mM Tris (pH 7.5), 150 mM NaCl, 1 mM EDTA, 1 mM EGTA, 1% Triton X-100, 2.5 mM sodium pyrophosphate, 1 mM Glycerolphosphate, 1 mM Na3VO4, 1 µg/ml Leupeptin
Note: We recommend adding 1 mM PMSF before use.
Protein A Agarose Beads: Add 5 ml of 1X PBS to 1.5 g of Protein A Agarose Beads. Shake 2 hours at 4°C; spin down. Wash pellet twice with PBS. Resuspend beads in 1 volume of PBS. (Can be stored for 2 weeks at 4°C)
3X SDS Sample Buffer: 187.5 mM Tris-HCl (pH 6.8 at 25°C), 6% w/v SDS, 30%, glycerol, 150 mM DTT, 0.03% w/v bromophenol blue,
Transfer Buffer:25 mM Tris base, 0.2 M glycine, 20% methanol (pH 8.5)
Blocking Buffer: 1X TBS, 0.1% Tween-20 with 5% w/v nonfat dry milk. For 150 ml, add 15 ml 10X TBS to 135 ml water, mix. Add 7.5 g nonfat dry milk and mix well. While stirring, add 0.15 ml Tween-20 (100%).
10X TBS (Tris-buffered saline): For 1 liter of 10X TBS, use 24.2 g Tris base and 80 g NaCl. Adjust pH to 7.6 with HCl (use at 1X).
Primary Antibody Dilution Buffer: 1X TBS, 0.05% Tween-20 with 5% nonfat dry milk. For 20 ml, add 2 ml 10X TBS to 18 ml water, mix. Add 1.0 g nonfat dry milk and mix well. While stirring, add 10 µl Tween-20 (100%).
Wash Buffer TBS/T: 1X TBS, 0.1% Tween-20
Chemiluminescent HRP Detection: secondary anti-rabbit antibody conjugated to horseradish peroxidase (HRP), ECL™ chemiluminescent reagent (Amersham Pharmacia)
Wash Buffer TBS/T: 1X TBS, 0.1% Tween-20
Blotting Membrane: This protocol has been optimized for nitrocellulose membranes, which we recommend. PVDF membranes may also be used.

Preparing Cell Lysates

1. Aspirate media. Treat cells by adding fresh media containing regulator for desired time.
2. To harvest cells under nondenaturing conditions, remove media and rinse cells once with ice-cold PBS.
3. Remove PBS and add 0.5 ml 1X ice-cold Cell Lysis Buffer plus 1 mM PMSF to each plate (10 cm2) and incubate the plate on ice for 5 minutes.
4. Scrape cells off the plate and transfer to microcentrifuge tubes. Keep on ice.
5. Sonicate 4 times for 5 seconds each on ice.
6. Microcentrifuge for 10 minutes at 4°C, and transfer the supernatant to a new tube. The supernatant is the cell lysate. If necessary, lysate can be stored at –80°C.

Immunoprecipitation

1. Take 200 µl cell lysate and add primary antibody; incubate with gentle rocking overnight at 4°C.
2. Add Protein A Agarose Beads (20 µl of 50% bead slurry). Incubate with gentle rocking for 1–3 hours at 4°C.
3. Microcentrifuge for 30 seconds at 4°C. Wash pellet 2 times with 500 µl of 1X Cell Lysis Buffer. Keep on ice during washes.
4. Resuspend the pellet with 20 µl 3X SDS Sample Buffer. Votex, then microcentrifuge for 30 seconds.
5. Heat the sample to 95–100°C for 2–5 minutes.
6. Load the sample (15–30 µl) on SDS-PAGE gel (12–15%).

7. Analyze sample by Western blotting (see Western Immunoblotting Protocol).

Immunoprecipitation Followed by Measuring HDAC Activity Protocol

1. Immunoprecipitation protocol is same as described in "Immunoprecipitation Followed by Western Immunoblotting Protocol" except that protease inhibitor such as Leupeptin and PMSF must be omitted.

2. After immunoprecipitation, add reaction mixture containing Fluoro-Substrate peptide solution to protein A agarose beads and measure HDAC activity according to the procedure in CycLex HDAC Assay kit [Cat# CY-1150].

Related Products

*** CycLex Cellular Histone Acetylation Assay Kit: Cat# CY-1140**
*** CycLex HDACs Deacetylase Fluorometric Assay Kit: Cat# CY-1150**
*** CycLex HDAC8 Deacetylase Fluorometric Assay Kit: Cat# CY-1158**
*** CycLex SIRT1/Sir2 Deacetylase Fluorometric Assay Kit: Cat# CY-1151**
*** CycLex SIRT2 Deacetylase Fluorometric Assay Kit: Cat# CY-1152**
*** CycLex SIRT3 Deacetylase Fluorometric Assay Kit: Cat# CY-1153**
*** CycLex SIRT6 Deacetylase Fluorometric Assay Kit: Cat# CY-1156**
*** Anti-Acetylated Histone/p53-K382 Mouse Monoclonal Antibody: Cat# CY-M1029**
*** Anti-Histone Deacetylase 1 (HDAC1) Rabbit Polyclonal Antibody: Cat# CY-P1011**
*** Anti-Histone Deacetylase 2 (HDAC2) Rabbit Polyclonal Antibody: Cat# CY-P1012**
*** Anti-Human SIRT1 Rabbit Polyclonal Antibody: Cat# CY-P1016**
*** NAD(+)-Dependent Deacetylase SIRT1: Cat# CY-E1151**
*** NAD(+)-Dependent Deacetylase SIRT2: Cat# CY-E1152**
*** NAD(+)-Dependent Deacetylase SIRT3: Cat# CY-E1153**
*** NAMPT (Nicotinamide Phosphoribosyltransferase): Cat# CY-E1251**
*** NMNAT1 (Nicotinamide Mononucleotide Adenylyltransferase 1): Cat# CY-E1252**

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