Revision 4

#4351 Store at -20C

CHD1 (D8C2) Rabbit mAb

Cell Signaling TECHNOLOGY®

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

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB, IP, ChIP	H M R Mk	Endogenous	220	Rabbit IgG	#O14646	1105

Product Usage Information

For optimal ChIP results, use 5 µl of antibody and 10 µg of chromatin (approximately 4 x 10^6 cells) per IP. This antibody has been validated using SimpleChIP® Enzymatic Chromatin IP Kits.

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50
Chromatin IP	1:100

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Specificity / Sensitivity

CHD1 (D8C2) Rabbit mAb recognizes endogenous levels of total CHD1 protein.

Species predicted to react based on 100% sequence homology:

Bovine, Dog, Pig

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human CHD1 protein.

Background

Chromodomain-helicase-DNA-binding domain (CHD) proteins have been identified in a variety of organisms (1,2). This family of proteins, which consists of nine members, has been divided into three separate subfamilies: subfamily I (CHD1 and CHD2), subfamily II (CHD3 and CHD4), and subfamily III (CHD5, CHD6, CHD7, CHD8, and CHD9). All of the CHD proteins contain two tandem N-terminal chromodomains, a SWI/SNF-related ATPase domain, and a C-terminal DNA binding domain (1,2). The chromodomains facilitate binding to methylated lysine residues of histone proteins and confer interactions with specific regions of chromatin. The SWI/SNF-related ATPase domain utilizes the energy from ATP hydrolysis to modify chromatin structure. CHD1 is a euchromatic protein that associates with the promoters of active genes, and is required for the maintenance of open chromatin and pluripotency in embryonic stem cells (3-6). The two chromodomains of CHD1 facilitate its recruitment to active genes by binding to methyl-lysine 4 of histone H3, a mark associated with transcriptional activation (4-6). Yeast CHD1 is a component of the SAGA and SLIK histone acetyltransferase complexes, and is believed to link histone methylation with histone acetylation during transcriptional activation (6). The CHD2 protein is not well characterized; however, mouse knockout studies suggest important functions in development and tumor suppression. Homozygous CHD2 knockout mice exhibit delayed growth and perinatal lethality (7). Heterozygous knockout mice show increased mortality and gross organ abnormalities, in addition to increased extramedullary hematopoiesis and susceptibility to lymphomas (7,8). CHD2 mutant cells are defective in hematopoietic stem cell differentiation and exhibit aberrant DNA damage responses (8).

Background References

1. Hall, J.A. and Georgel, P.T. (2007) *Biochem Cell Biol* 85, 463-76.
2. Marfella, C.G. and Imbalzano, A.N. (2007) *Mutat Res* 618, 30-40.
3. Gaspar-Maia, A. et al. (2009) *Nature* 460, 863-8.
4. Sims, R.J. et al. (2005) *J Biol Chem* 280, 41789-92.
5. Flanagan, J.F. et al. (2005) *Nature* 438, 1181-5.
6. Pray-Grant, M.G. et al. (2005) *Nature* 433, 434-8.
7. Marfella, C.G. et al. (2006) *J Cell Physiol* 209, 162-71.
8. Nagarajan, P. et al. (2009) *Oncogene* 28, 1053-62.

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 nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

WB: Western Blotting **IP:** Immunoprecipitation **ChIP:** Chromatin IP

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