Revision 1

Store at -20C

#8551

MacroH2A1 Antibody

Cell Signaling TECHNOLOGY®

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H M R Mk	Endogenous	40	Rabbit	#O75367-1	9555

Product Usage Information

Application	Dilution
Western Blotting	1:1000

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

MacroH2A1 Antibody recognizes endogenous levels of total MacroH2A1 protein, both isoform 1 (macroH2A1.1) and isoform 2 (macroH2A1.2). This antibody does not cross-react with MacroH2A2 protein.

Species predicted to react based on 100% sequence homology

Hamster, Bovine, Guinea Pig

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Val257 of human MacroH2A1 protein. Antibodies are purified by protein A and peptide affinity chromatography.

Background

Histone macroH2A1 and macroH2A2 comprise a family of variant histone H2A proteins. MacroH2A1 exists as two distinct isoforms due to alternative splicing of a single gene; macroH2A1.1 levels accumulate throughout differentiation and development while macroH2A1.2 shows a constant level of expression (1). MacroH2A1 and macroH2A2 are encoded by completely distinct genes located on separate chromosomes (2,3). Both macroH2A1 and macroH2A2 proteins contain an amino-terminal histone-like region with 64% sequence identity to canonical histone H2A, in addition to a carboxy-terminal “macro” domain (1-3). MacroH2A1 and macroH2A2 are enriched in facultative heterochromatin, including inactivated X chromosomes in mammalian females and senescence-associated heterochromatin foci (2-5). Both act to repress gene transcription by inhibiting the binding of transcription factors to chromatin, the acetylation of histones by p300, and the chromatin-remodeling activities of SWI/SNF and ACF (6,7). The macro domain of macroH2A1.1 binds to ADP-ribose and functions to recruit macroH2A1.1 to activated PARP at sites of DNA damage, where it mediates chromatin rearrangements to locally regulate the DNA damage response (8). MacroH2A1.2 and macroH2A2 do not bind poly-ADP-ribose and are not recruited to sites of activated PARP (8).

Background References

1. Pehrson, J.R. et al. (1997) *J Cell Biochem* 65, 107-13.
2. Chadwick, B.P. and Willard, H.F. (2001) *Hum Mol Genet* 10, 1101-13.
3. Costanzi, C. and Pehrson, J.R. (2001) *J Biol Chem* 276, 21776-84.
4. Costanzi, C. and Pehrson, J.R. (1998) *Nature* 393, 599-601.
5. Zhang, R. et al. (2005) *Dev Cell* 8, 19-30.
6. Angelov, D. et al. (2003) *Mol Cell* 11, 1033-41.
7. Doyen, C.M. et al. (2006) *Mol Cell Biol* 26, 1156-64.
8. Timinszky, G. et al. (2009) *Nat Struct Mol Biol* 16, 923-9.

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

W: Western Blotting

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat **Mk:** Monkey

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