Revision 1

#12387 Store at -20C

UHRF1 (D6G8E) Rabbit mAb

Cell Signaling TECHNOLOGY®

Orders: 877-616-CELL (2355) orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB, IP	H M R	Endogenous	95	Rabbit IgG	#Q96T88	29128

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50

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

UHRF1 (D6G8E) Rabbit mAb recognizes endogenous levels of total UHRF1 protein. This antibody does not cross-react with UHRF2 protein. This antibody may recognize a non-specific 32 kDa protein in some cell lysates.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Val78 of human UHF1 protein.

Background

Ubiquitin-like PHD and RING finger domain-containing protein 1 (UHRF1), also known as Inverted CCAAT box-binding protein of 90 kDa (ICBP90) and Nuclear Zinc Finger Protein NP95 (NP95), is a nuclear protein that was first discovered as a CCAAT box-binding protein that regulates the expression of the Topoisomerase IIα (*TOP2A*) and *Rb1* genes (1,2). Later studies have shown that UHRF1 is required for maintenance of CpG DNA methylation, the process of copying pre-existing methylation patterns onto the newly synthesized DNA strand after DNA replication (3-5). UHRF1 localizes primarily with highly methylated pericentromeric heterochromatin and is required for proper structure and function of these regions of the genome (6,7). However, UHRF1 also localizes to euchromatic regions of the genome and functions to negatively regulate the expression of a subset of tumor suppressor genes (2,8,9). The localization and repressive functions of UHRF1 are both mediated by several protein domains, including a ubiquitin-like (UBL) domain, Tudor domain, PHD domain, SET and RING finger-associated (SRA) domain, and a RING finger domain. The SRA domain of UHRF1 binds with high affinity to hemi-methylated DNA and functions to properly target the associated maintenance DNA methyltransferase DNMT1 protein to mediate faithful methylation of the newly synthesized DNA strand (3-5). Additional targeting of UHRF1 to heterochromatin is mediated by the Tudor domain, which binds specifically to tri-methylated Lys9 of histone H3, a histone mark associated with pericentromeric heterochromatin (10-12). Targeting of UHRF1 to euchromatin is further mediated by the PHD domain, which binds specifically to unmethylated Arg2 of histone H3, which is commonly associated with euchromatin (13). In addition to recruiting DNMT1, UHRF1 recruits the histone deacetylase 1 (HDAC1) protein to target loci, resulting in deacetylation of histones, and providing an additional mechanism for transcriptional repression (3). Taken together, these studies demonstrate that UHRF1 functions to link DNA methylation and histone modifications to the maintenance of repressive chromatin structures. These functions of UHRF1 are important for proper maintenance of cell growth and proliferation, as research studies have shown UHRF1 overexpression in a number of cancers (breast, lung, colon, and prostate cancer) is associated with increased proliferation and malignancy (9,14-16).

Background References

1. Hopfner, R. et al. (2000) *Cancer Res* 60, 121-8.
2. Jeanblanc, M. et al. (2005) *Oncogene* 24, 7337-45.
3. Unoki, M. et al. (2004) *Oncogene* 23, 7601-10.
4. Sharif, J. et al. (2007) *Nature* 450, 908-12.
5. Bostick, M. et al. (2007) *Science* 317, 1760-4.
6. Papait, R. et al. (2007) *Mol Biol Cell* 18, 1098-106.
7. Papait, R. et al. (2008) *Mol Biol Cell* 19, 3554-63.
8. Daskalos, A. et al. (2011) *Cancer* 117, 1027-37.
9. Kim, J.K. et al. (2009) *Nucleic Acids Res* 37, 493-505.
10. Nady, N. et al. (2011) *J Biol Chem* 286, 24300-11.
11. Liu, X. et al. (2013) *Nat Commun* 4, 1563.
12. Rothbart, S.B. et al. (2012) *Nat Struct Mol Biol* 19, 1155-60.

13. Rajakumara, E. et al. (2011) *Mol Cell* 43, 275-84.
14. Babbio, F. et al. (2012) *Oncogene* 31, 4878-87.
15. Kofunato, Y. et al. (2012) *Oncol Rep* 28, 1997-2002.
16. Unoki, M. et al. (2010) *Br J Cancer* 103, 217-22.

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

Trademarks and Patents

Limited Uses