Revision 13

#18032 Store at +4C

# p53 (DO-1) Mouse 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, IHC-P | H | Endogenous | 53 | Mouse IgG2a | #P04637 | 7157 |

## Product Usage Information

| Application | Dilution |
|---|---|
| Western Blotting | 1:1000 |
| Immunohistochemistry (Paraffin) | 1:1600 - 1:6400 |

## Storage

Supplied at 1 mg/mL in PBS containing 0.09% sodium azide. Store at -20°C. *This product will freeze at -20°C so it is recommended to aliquot into single-use vials to avoid multiple freeze/thaw cycles.* A slight precipitate may be present, but will not interfere with antibody performance. This product is stable for 36 months when stored at -20C.

## Specificity / Sensitivity

p53 (DO-1) Mouse mAb recognizes endogenous levels of total p53 protein.

## Source / Purification

Monoclonal antibody is produced by immunizing animals with recombinant human wild type p53 protein expressed in E. coli.

## Background

The p53 tumor suppressor protein plays a major role in cellular response to DNA damage and other genomic aberrations. Activation of p53 can lead to either cell cycle arrest and DNA repair or apoptosis (1). p53 is phosphorylated at multiple sites *in vivo* and by several different protein kinases *in vitro* (2,3). DNA damage induces phosphorylation of p53 at Ser15 and Ser20 and leads to a reduced interaction between p53 and its negative regulator, the oncoprotein MDM2 (4). MDM2 inhibits p53 accumulation by targeting it for ubiquitination and proteasomal degradation (5,6). p53 can be phosphorylated by ATM, ATR, and DNA-PK at Ser15 and Ser37. Phosphorylation impairs the ability of MDM2 to bind p53, promoting both the accumulation and activation of p53 in response to DNA damage (4,7). Chk2 and Chk1 can phosphorylate p53 at Ser20, enhancing its tetramerization, stability, and activity (8,9). p53 is phosphorylated at Ser392 *in vivo* (10,11) and by CAK *in vitro* (11). Phosphorylation of p53 at Ser392 is increased in human tumors (12) and has been reported to influence the growth suppressor function, DNA binding, and transcriptional activation of p53 (10,13,14). p53 is phosphorylated at Ser6 and Ser9 by CK1δ and CK1ε both *in vitro* and *in vivo* (13,15). Phosphorylation of p53 at Ser46 regulates the ability of p53 to induce apoptosis (16). Acetylation of p53 is mediated by p300 and CBP acetyltransferases. Inhibition of deacetylation suppressing MDM2 from recruiting HDAC1 complex by p19 (ARF) stabilizes p53. Acetylation appears to play a positive role in the accumulation of p53 protein in stress response (17). Following DNA damage, human p53 becomes acetylated at Lys382 (Lys379 in mouse) *in vivo* to enhance p53-DNA binding (18). Deacetylation of p53 occurs through interaction with the SIRT1 protein, a deacetylase that may be involved in cellular aging and the DNA damage response (19).

## Background References

1. Levine, A.J. (1997) *Cell* 88, 323-31.
2. Meek, D.W. (1994) *Semin Cancer Biol* 5, 203-10.
3. Milczarek, G.J. et al. (1997) *Life Sci* 60, 1-11.
4. Shieh, S.Y. et al. (1997) *Cell* 91, 325-34.
5. Chehab, N.H. et al. (1999) *Proc Natl Acad Sci U S A* 96, 13777-82.
6. Honda, R. et al. (1997) *FEBS Lett* 420, 25-7.
7. Tibbetts, R.S. et al. (1999) *Genes Dev* 13, 152-7.
8. Shieh, S.Y. et al. (1999) *EMBO J* 18, 1815-23.
9. Hirao, A. et al. (2000) *Science* 287, 1824-7.
10. Hao, M. et al. (1996) *J Biol Chem* 271, 29380-5.
11. Lu, H. et al. (1997) *Mol Cell Biol* 17, 5923-34.
12. Ullrich, S.J. et al. (1993) *Proc Natl Acad Sci U S A* 90, 5954-8.
13. Kohn, K.W. (1999) *Mol Biol Cell* 10, 2703-34.
14. Lohrum, M. and Scheidtmann, K.H. (1996) *Oncogene* 13, 2527-39.
15. Knippschild, U. et al. (1997) *Oncogene* 15, 1727-36.
16. Oda, K. et al. (2000) *Cell* 102, 849-62.
17. Ito, A. et al. (2001) *EMBO J* 20, 1331-40.
18. Sakaguchi, K. et al. (1998) *Genes Dev* 12, 2831-41.

19. Solomon, J.M. et al. (2006) *Mol Cell Biol* 26, 28-38.

**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 **IHC-P:** Immunohistochemistry (Paraffin)

**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**