Revision 3

Store at -20C

#7526

# UBE3A (D10D3) Rabbit mAb

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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: |
|---|---|---|---|---|---|---|
| W, W-S | H M R Mk | Endogenous | 98 | Rabbit IgG | #Q05086 | 7337 |

## Product Usage Information

| Application | Dilution |
|---|---|
| Western Blotting | 1:1000 |
| Simple Western™ | 1:10 - 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

UBE3A (D10D3) Rabbit mAb recognizes endogenous levels of total UBE3A protein. Based upon sequence alignment, this antibody is predicted to cross-react with all UBE3A splice variants.

## Species predicted to react based on 100% sequence homology

Bovine, Dog, Horse, Rabbit

## Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human UBE3A protein.

## Background

UBE3A, also commonly referred to as E6AP (E6 Associated Protein), is an E3 ubiquitin protein ligase and founding member of the HECT (Homologous to the E6 Carboxyl Terminus) family of E3 ligases (1). UBE3A has been shown to be hijacked by the oncogenic E6 protein of high-risk human papillomaviruses (HPV16 and HPV18) that causes the ubiquitination activity of UBE3A to be inappropriately directed toward several specific cellular proteins, the most notable of which, with respect to carcinogenesis, is p53 (2). Although the DNA-repair enzyme, HHR23A (human homolog A of Rad23), was the first described E6-independent substrate of UBE3A, very few E6-independent targets of UBE3A have been identified. This continues to be an active area of research, particularly because mutations or disruption in expression of UBE3A in the brain are the cause of Angelman syndrome (AS), a severe form of mental retardation (3-6). Although UBE3A is expressed in most human tissues from both parental alleles, it is expressed from the maternal allele in subregions of the brain, with the paternal allele being epigenetically silenced. AS is caused by disruptions in expression of the materal *UBE3A* allele, generally by large chromosomal deletion, but also by point mutations within the *UBE3A* coding sequence. This strongly suggests that lack of ubiquitination of one or more UBE3A substrates in neuronal tissue is responsible for the AS phenotype (7). Indeed, a recent study identified several new neuronal substrates of UBE3A including Arc and Ephexin-5 (8). The immediate early gene Arc (activity-regulated cytoskeleton-associated protein) is rapidly upregulated after robust neuronal stimulation and promotes internalization of AMPA-type glutamate receptors (AMPARs), resulting in reduction in synaptic strength. UBE3A ubiquitinates Arc and promotes its degradation by the 26S proteasome, thus preventing AMPAR internalization (8). Disruption in neuronal UBE3A function leads to an increase in Arc expression and a decrease in AMPARs at excitatory synapses, which may contribute to the neurological symptoms of AS.

## Background References

1. Huibregtse, J.M. et al. (1995) *Proc Natl Acad Sci U S A* 92, 5249.
2. Huibregtse, J.M. et al. (1993) *Mol Cell Biol* 13, 775-84.
3. Fang, P. et al. (1999) *Hum Mol Genet* 8, 129-35.
4. Jiang, Y. et al. (1999) *Am J Hum Genet* 65, 1-6.
5. Jiang, Y.H. et al. (1998) *Neuron* 21, 799-811.
6. Kumar, S. et al. (1999) *J Biol Chem* 274, 18785-92.
7. Mabb, A.M. et al. (2011) *Trends Neurosci* 34, 293-303.
8. Greer, P.L. et al. (2010) *Cell* 140, 704-16.

## 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 **W-S:** Simple Western™

## Cross-Reactivity Key

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

## Trademarks and Patents



## Limited Uses