Revision 1

#9406 Store at -20C

KLHL12 (2G2) 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	H M Mk	Endogenous	62	Mouse IgG1	#Q53G59	59349

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, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Specificity / Sensitivity

KLHL12 (2G2) Mouse mAb recognizes endogenous levels of total KLHL12 protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a recombinant protein specific to the carboxy terminus of human KLHL12 protein.

Background

Cullins are proteins that function as molecular scaffolds for modular ubiquitin ligases typified by the SCF (Skp1-CUL1-F-box) complex (1-3). The substrate selectivity of these E3 ligases is dictated by a specificity module that binds cullins. In the SCF complex, this module is composed of Skp1, which binds directly to CUL1, and a member of the F-box family of proteins such as Skp2 (1-4). CUL3 has been shown to be required for embryonic development in mammals and *Caenorhabditis elegans* (5-7) but until recently, its substrate specificity adaptor had yet to be elucidated. It is now recognized that substrate adaptors for CUL3-based ubiquitin ligase complexes contain a conserved BTB/POZ (Pox virus and Zinc finger) domain. This domain, which was initially identified in the Drosophila transcriptional repressors broad complex, tramtrack, and bric-a-brac is present in more than 190 human proteins. BTB proteins contain a variety of putative protein-protein interaction domains, including MATH domains, zinc finger repeats, and kelch repeats (8).

There are several lines of evidence suggesting that Kelch-like 12 protein (KLHL12) is a substrate-specific adaptor for the CUL3-based ubiquitin ligase complex. Analysis of the amino acid sequence of KLHL12 reveals an amino-terminal BTB motif, a central linker region, and a carboxy-terminal kelch domain composed of kelch repeats. Furthermore, KLHL12 has been shown to negatively regulate Wnt signaling by binding Disheveled and targeting it for ubiquitin-dependent proteasomal degradation (9). More recently, KLHL12 was shown to drive the assembly of large COPII vesicles by promoting the monoubiquitination of the COPII component Sec31. As a result, CUL3-KLHL12-dependent ubiquitination is essential for collagen export, a step that is required for integrin-dependent mouse embryonic stem cell division (10).

Background References

1. Zheng, N. et al. (2002) *Nature* 416, 703-9.
2. Skowyra, D. et al. (1997) *Cell* 91, 209-19.
3. Feldman, R.M. et al. (1997) *Cell* 91, 221-30.
4. Bai, C. et al. (1996) *Cell* 86, 263-74.
5. Singer, J.D. et al. (1999) *Genes Dev* 13, 2375-87.
6. Winston, J.T. et al. (1999) *Genes Dev* 13, 2751-7.
7. Kurz, T. et al. (2002) *Science* 295, 1294-8.
8. Collins, T. et al. (2001) *Mol Cell Biol* 21, 3609-15.
9. Angers, S. et al. (2006) *Nat Cell Biol* 8, 348-57.
10. Jin, L. et al. (2012) *Nature* 482, 495-500.

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

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