

PHF6 Antibody

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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	H M R Mk	Endogenous	45 (human/monkey), 41 (mouse/rat)	Rabbit	#Q8IWS0	84295

Product Usage Information**Application**

Western Blotting

Dilution

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

PHF6 Antibody recognizes endogenous levels of total PHF6 protein.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Gly63 of human PHF6 protein. Antibodies are purified by protein A and peptide affinity chromatography.

Background

PHD finger protein 6 (PHF6) is a 41 kDa transcriptional repressor that was first identified as a mutated gene in Börjeson-Forssman-Lehmann syndrome (BFLS), an X-linked intellectual disability disorder (1,2). Somatic loss-of-function mutations in the *PHF6* gene have also been linked to T-cell acute lymphoblastic leukemia (T-ALL) and acute myeloid leukemia (AML) (3-5). Structurally, PHF6 contains two nuclear localization sequences, one nucleolar localization sequence, and two plant homeodomain (PHD)-like zinc fingers (6,7). Unlike other PHD proteins, the PHD domains of PHF6 are considered to be imperfect and have not been shown to directly bind to histones; however, the isolated second PHD domain (PHD2) has been shown to bind dsDNA directly (7). A more recent study finds that PHF6 interacts with histones via protein-protein interactions, and that this association is independent of DNA and enriched in the presence of the activating marks H3K27ac and H3K4me3 (8). PHF6 interacts with PAF1 and other subunits of the PAF1 transcription elongation complex, and knockdown of either PHF6 or PAF1 adversely affects proper neuronal positioning and migration in mouse cerebral cortex (9). PHF6 has also been shown to associate with members of the nucleosome remodeling and histone deacetylase (NuRD) chromatin remodeling complex, including CHD4, HDAC1, and RBBP4, where it is likely involved in transcriptional repression of developmental genes (10). PHF6 plays a critical role in regulating hematopoiesis, particularly by regulating chromatin accessibility to lineage-specific transcription factors. Studies suggest that PHF6 promotes B-cell lineage differentiation through the expression of B-cell specific genes, while simultaneously suppressing T-cell lineage differentiation (8). Indeed, a CRISPR-Cas9 knockout study shows that PHF6 is required for growth of B-ALL cells, while mice transplanted with PHF6-deficient B-ALL cells develop T-ALL phenotypes (8).

Background References

1. Lower, K.M. et al. (2002) *Nat Genet* 32, 661-5.
2. Gedeon, A.K. et al. (1996) *Am J Med Genet* 64, 63-8.
3. Van Vlierberghe, P. et al. (2010) *Nat Genet* 42, 338-42.
4. de Rooij, J.D. et al. (2016) *Br J Haematol* 175, 967-71.
5. Van Vlierberghe, P. et al. (2011) *Leukemia* 25, 130-4.
6. Jahani-Asl, A. et al. (2016) *Neurobiol Dis* 96, 227-35.
7. Liu, Z. et al. (2014) *J Biol Chem* 289, 10069-83.
8. Soto-Feliciano, Y.M. et al. (2017) *Genes Dev* 31, 973-89.
9. Zhang, C. et al. (2013) *Neuron* 78, 986-93.
10. Todd, M.A. and Picketts, D.J. (2012) *J Proteome Res* 11, 4326-37.

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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