SANTA CRUZ BIOTECHNOLOGY, INC.

Whirlin (D-5): sc-271939

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Whirlin is a cytoplasmic PDZ domain-containing protein that plays a role in elongation and maintenance of stereocilia, mechanosensory organelles located in hair cells of the inner ear. Whirlin co-localizes with Actin filaments and is primarily detected in cochlear hair cells. It is connected to the dynamic Usher protein interactome and has a pleiotropic function in both the retina and the inner ear. Myosin XVA is a motor protein that accociates with the second and third PDZ domain of Whirlin through its C-terminal PDZ-ligand. Myosin XVA then delivers Whirlin to the tips of stereocilia, which are subsequently elongated. p55 also interacts with Whirlin, and mutations in DFNB31, the Whirlin gene, lead to an early ablation of p55 labeling of stereocilia, which may cause recessive hearing loss in rats and humans.

REFERENCES

1. Belyantseva, I.A., et al. 2003. Stereocilia: the long and the short of it. Trends Mol. Med. 9: 458-461.
2. Mburu, P., et al. 2003. Defects in Whirlin, a PDZ domain molecule involved in stereocilia elongation, cause deafness in the whirler mouse and families with DFNB31. Nat. Genet. 34: 421-428.
3. Delprat, B., et al. 2005. Myosin XVA and Whirlin, two deafness gene products required for hair bundle growth, are located at the stereocilia tips and interact directly. Hum. Mol. Genet. 14: 401-410.
4. Adato, A., et al. 2005. Usherin, the defective protein in Usher syndrome type IIA, is likely to be a component of interstereocilia ankle links in the inner ear sensory cells. Hum. Mol. Genet. 14: 3921-3932.
5. Belyantseva, I.A., et al. 2005. Myosin XVA is required for tip localization of Whirlin and differential elongation of hair-cell stereocilia. Nat. Cell Biol. 7: 148-156.
6. Rzadzinska, A., et al. 2005. Balanced levels of Espin are critical for stereociliary growth and length maintenance. Cell Motil. Cytoskeleton 62: 157-165.
7. Tlili, A., et al. 2005. Identification of a novel frameshift mutation in the DFNB31/WHRN gene in a Tunisian consanguineous family with hereditary non-syndromic recessive hearing loss. Hum. Mutat. 25: 503.
8. Mburu, P., et al. 2006. Whirlin complexes with p55 at the stereocilia tip during hair cell development. Proc. Natl. Acad. Sci. USA 103: 10973-10978.

CHROMOSOMAL LOCATION

Genetic locus: DFNB31 (human) mapping to 9q32; Whrn (mouse) mapping to 4 C1.

SOURCE

Whirlin (D-5) is a mouse monoclonal antibody raised against amino acids 608-907 mapping at the C-terminus of Whirlin of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

Whirlin (D-5) is recommended for detection of Whirlin, isoforms 1, 3 and 4 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Whirlin siRNA (h): sc-61800, Whirlin siRNA (m): sc-61801, Whirlin shRNA Plasmid (h): sc-61800-SH, Whirlin shRNA Plasmid (m): sc-61801-SH, Whirlin shRNA (h) Lentiviral Particles: sc-61800-V and Whirlin shRNA (m) Lentiviral Particles: sc-61801-V.

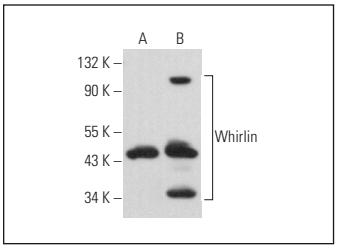
Molecular Weight of Whirlin: 97 kDa.

Positive Controls: PC-12 cell lysate: sc-2250, NIH/3T3 whole cell lysate: sc-2210 or AT3B-1 whole cell lysate: sc-364372.

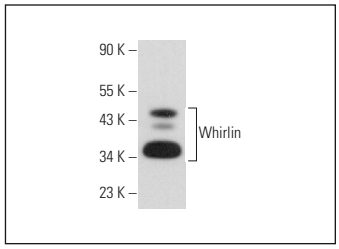
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



Whirlin (D-5): sc-271939. Western blot analysis of Whirlin expression in AT3B-1 (**A**) and NIH/3T3 (**B**) whole cell lysates.



Whirlin (D-5): sc-271939. Western blot analysis of Whirlin expression in PC-12 whole cell lysate.

SELECT PRODUCT CITATIONS

1. Basei, F.L., et al. 2015. New interaction partners for Nek4.1 and Nek4.2 isoforms: from the DNA damage response to RNA splicing. Proteome Sci. 13: 11.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.