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Product Information

Anti-Opsin antibody, Mouse monoclonal
clone RET-P1, purified from hybridoma cell culture

Product Number **SAB4200762**

Product Description

Anti-Opsin antibody, Mouse monoclonal (rhodopsin) (mouse IgG1 isotype) is derived from the RET-P1 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from BALB/C mice immunized with rat retinal membranes[1-2] (GeneID: 24717). The isotype is determined by ELISA using Mouse Monoclonal Antibody Isotyping Reagents, Product Number ISO2. The antibody is purified from culture supernatant of hybridoma cells.

Anti-Opsin antibody, Mouse monoclonal specifically recognizes an epitope located in amino acid residues 4-10 at the N-terminus of the Opsin (rhodopsin) molecule.[3-5] The antibody specifically labels the cell bodies, outer and inner segments (rods but not cones) of photoreceptor surface.[1] The antibody reacts with rod photoreceptors of human, bovine[2,4], rabbit[12], rat, mouse[8,11], avian (dove[5], quail[5], duck[5]), salamander[1], turtle[5], amphibians[2-3] and fish[5] origin. The antibody may be used in various immunochemical techniques including Immunoblotting (~39 kDa)[2,5], Immunofluorescence[6-7], Immunohistochemistry[1-2],ELISA[3] and RIA[4]. In Immunoblotting of rat retina, the antibody labels a doublet closely spaced of ~39 kDa and less intense bands of 78 and 115 kDa, representing rhodopsin monomer and aggregates.[2]

The vertebrate retina is a highly ordered structure specialized for the detection and transduction of light energy into electrical signals. The retinal tissue consists mainly of Müller glial cells, photoreceptors (rods and cones) and a variety of neurons, all of which developed from retinal neuroepithelial cells. Photoreceptors are responsible for the initial step in visual processing, converting the signal of photon absorption into synaptic transmission. The visual pigment in vertebrate rods, responsible for the absorption of light quanta is rhodopsin (also called opsin). Rhodopsin comprises >95% of the rod outer segments (ROS) intrinsic membrane and consists of a protein moiety - an opsin - and a non-protein moiety - the chromophore retinal.[10] Light is absorbed by rhodopsin, and the subsequent conformational change leads to the activation of a cyclic GMP phosphodiesterase through a specific G-protein intermediate, transducin.

Opsin proteins are members of the G-protein coupled receptor (GPCR) superfamily and serve as essential molecules for mediating the ability of animals to detect and use light for diverse biological functions.[9-10] Mutations in the opsin (rhodopsin) gene are linked to retinitis pigmentosa (RP), a disease characterized by retinal degeneration resulting in reduced peripheral vision and night blindness.[13]
Anti-Opsin antibody, Mouse monoclonal can be useful in the study of Opsin location, functional properties and molecular mechanisms governing rod photoreceptor differentiation.

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: ~ 1.0 mg/mL

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2–8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working concentration of 2-4 μg/mL is recommended using human retinoblastoma Y79 cell line extract.

Immunohistochemistry: a working concentration of 5-10 μg/ml is recommended using rat eye frozen sections.

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working concentration by titration test.

References

1. Barnstable CJ., *Nature*, **286**, 231-5 (1980).
2. Fekete DM. and Barnstable CJ., *J Neurocytol*., **12**, 785-803 (1983).
3. Hargrave PA., et al., *Exp Eye Res*., **42**, 363-73 (1986).
4. Hicks D. and Barnstable CJ., *J Histochem Cytochem*., **35**, 1317-28 (1987).
5. Silver R., et al., *Cell Tissue Res*., **253**, 189-98 (1988).
6. Akagawa K. and Barnstable CJ., *Brain Res*., **383**, 110-20 (1986).
7. Watanabe T. and Raff MC., *Development*, **114**, 899-906 (1992).
8. Silverman MS. and Hughes SE., *Prog Clin Biol Res*., **314**, 687-704 (1989).
9. Porter ML., et al., *Proc Biol Sci*., **279**, 3-14 (2012).
10. Terakita A., *Genome Biol*., **6**, 213 (2005).
11. Barone I., et al., *Mol Vis*., **20**, 1545-56 (2014).
12. Hu Y., et al., *Invest Ophthalmol Vis Sci*., **49**, 3185-92 (2008).
13. Chen Y., et al., *J Biol Chem*., **289**, 9288-303 (2014).

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