

OPN1MW/LW (C-19): sc-14358

BACKGROUND

G protein-coupled receptors (GPCRs), which are characterized by containing seven transmembrane α helices, elicit G protein-mediated signaling cascades in response to a variety of stimuli. The opsin subfamily, which represents approximately 90 percent of all GPCRs, is comprised of photoreceptors that are activated by light. It includes the red-, green- and blue-sensitive opsins and rhodopsin. The opsin subfamily consists of an apoprotein covalently linked to 11-*cis*-retinal, which undergoes isomerization upon the absorption of photons. This isomerization leads to a conformational change of the protein, which results in the activation of hundreds of G proteins. Color is perceived in humans by three pigments, which localize to retinal cone photoreceptor cells. Mutations in the gene encoding OPN1MW and OPN1MW2 are the cause of deutanopic colorblindness, whereas OPN1LW gene mutations lead to protanopic colorblindness.

REFERENCES

1. Fung, B.K., et al. 1980. Flow of information in the light-triggered cyclic nucleotide cascade of vision. *Proc. Natl. Acad. Sci. USA* 78: 152-156.
2. Hargrave, P.A., et al. 1983. The structure of bovine rhodopsin. *Biophys. Struct. Mech.* 9: 235-244.
3. Drummond-Borg, M., et al. 1988. Molecular basis of abnormal red-green color vision: a family with three types of color vision defects. *Am. J. Hum. Genet.* 43: 675-683.
4. Oprian, D.D., et al. 1991. Design, chemical synthesis, and expression of genes for the three human color vision pigments. *Biochemistry* 30: 11367-11372.
5. Merbs, S.L., et al. 1992. Absorption spectra of human cone pigments. *Nature* 356: 433-435.
6. Weitz, C.J., et al. 1992. Human tritanopia associated with two amino acid substitutions in the blue-sensitive opsin. *Am. J. Hum. Genet.* 50: 498-507.
7. Iiri, T., et al. 1998. G protein diseases furnish a model for the turn-on switch. *Nature* 394: 35-38.
8. Palczewski, K., et al. 2000. Crystal structure of rhodopsin: A G protein-coupled receptor. *Science* 289: 739-745.

CHROMOSOMAL LOCATION

Genetic locus: OPN1MW/OPN1LW/OPN1MW2 (human) mapping to Xq28; Opn1mw (mouse) mapping to X A7.3.

SOURCE

OPN1MW/LW (C-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus of the opsin protein encoded by OPN1MW of human origin.

STORAGE

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

PRODUCT

Each vial contains 200 μ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-14358 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

OPN1MW/LW (C-19) is recommended for detection of the opsin proteins encoded by OPN1MW and OPN1LW of human origin, and the opsin protein encoded by Opn1mw of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

Molecular Weight of OPN1MW/LW: 40 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Gandorfer, A., et al. 2004. Posterior vitreous detachment induced by microplasmin. *Invest. Ophthalmol. Vis. Sci.* 45: 641-647.
2. Yang, L.P., et al. 2007. Role of NF κ B and MAPKs in light-induced photoreceptor apoptosis. *Invest. Ophthalmol. Vis. Sci.* 48: 4766-4776.
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4. Novales Flamarique, I. 2011. Unique photoreceptor arrangements in a fish with polarized light discrimination. *J. Comp. Neurol.* 519: 714-737.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.