

OPN1SW (H-40): sc-30021

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. They are the blue-, green- and red-sensitive opsins, which are encoded by OPN1SW, OPN1MW and OPN1LW, respectively. Mutations in the OPN1MW and OPN1LW encoded opsins lead to the X-linked disorders protanopia and deutanopia, respectively. Mutations in the OPN1SW encoded opsin leads to tritanopia, an autosomal dominant disorder, which is characterized by decreased sensitivity to blue light.

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. 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.
6. Merbs, S.L. and Nathans, J. 1992. Absorption spectra of human cone pigments. *Nature* 356: 433-435.
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: OPN1SW (human) mapping to 7q32.1; Opn1sw (mouse) mapping to 6A3.3.

SOURCE

OPN1SW (H-40) is a rabbit polyclonal antibody raised against amino acids 257-296 mapping near the C-terminus of the opsin protein encoded by OPN1SW of human origin.

RESEARCH USE

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

PRODUCT

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

APPLICATIONS

OPN1SW (H-40) is recommended for detection of the opsin protein encoded by OPN1SW of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g 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).

OPN1SW (H-40) is also recommended for detection of the opsin protein encoded by OPN1SW in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for OPN1SW siRNA (h): sc-40142, OPN1SW siRNA (m): sc-40143, OPN1SW shRNA Plasmid (h): sc-40142-SH, OPN1SW shRNA Plasmid (m): sc-40143-SH, OPN1SW shRNA (h) Lentiviral Particles: sc-40142-V and OPN1SW shRNA (m) Lentiviral Particles: sc-40143-V.

Molecular Weight of OPN1SW: 40 kDa.

Positive Controls: mouse eye extract: sc-364241.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker[™] compatible goat anti-rabbit IgG-HRP: sc-2030 (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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz[™] Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Barone, I., et al. 2012. Environmental enrichment extends photoreceptor survival and visual function in a mouse model of retinitis pigmentosa. *PLoS ONE* 7: e50726.

STORAGE

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

PROTOCOLS

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