

rhodopsin (SPM443): sc-56472

BACKGROUND

G protein-coupled receptors (GPCRs), which are characterized as 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, and they include 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. Specifically, rhodopsin exhibits a maximal absorption at 495 nm and mediates vision in dim light. Mutations in the rhodopsin gene lead to retinitis pigmentosa, which can be inherited as an autosomal dominant, an autosomal recessive or an X-linked recessive disorder.

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. Sung, C.H., et al. 1991. Rhodopsin mutations in autosomal dominant retinitis pigmentosa. *Proc. Natl. Acad. Sci. USA* 2: 249-255.
4. Wang, S.Z., et al. 1992. A visual pigment from chicken that resembles rhodopsin: amino acid sequence, gene structure, and functional expression. *Biochemistry* 13: 3309-3315.
5. Iiri, T., et al. 1998. G protein diseases furnish a model for the turn-on switch. *Nature* 394: 35-38.
6. Lindsay, S.M., et al. 1999. Spectral sensitivity of vision and bioluminescence in the midwater shrimp. *Biol. Bull.* 197: 348-360.

CHROMOSOMAL LOCATION

Genetic locus: RHO (human) mapping to 3q22.1; Rho (mouse) mapping to 6 E3.

SOURCE

rhodopsin (SPM443) is a mouse monoclonal antibody raised against a membrane preparation from adult retina of rat origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

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.

APPLICATIONS

rhodopsin (SPM443) is recommended for detection of rhodopsin 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)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for rhodopsin siRNA (h): sc-40150, rhodopsin siRNA (m): sc-40151, rhodopsin shRNA Plasmid (h): sc-40150-SH, rhodopsin shRNA Plasmid (m): sc-40151-SH, rhodopsin shRNA (h) Lentiviral Particles: sc-40150-V and rhodopsin shRNA (m) Lentiviral Particles: sc-40151-V.

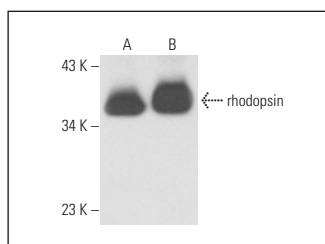
Molecular Weight of rhodopsin: 40 kDa.

Positive Controls: mouse eye extract: sc-364241 or rat eye extract: sc-364805.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ 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-IgG κ BP-FITC: sc-516140 or m-IgG κ 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



rhodopsin (SPM443): sc-56472. Western blot analysis of rhodopsin expression in rat eye (A) and mouse eye (B) tissue extracts.

SELECT PRODUCT CITATIONS

1. Amirpour, N., et al. 2012. Differentiation of human embryonic stem cell-derived retinal progenitors into retinal cells by Sonic hedgehog and/or retinal pigmented epithelium and transplantation into the subretinal space of sodium iodate-injected rabbits. *Stem Cells Dev.* 21: 42-53.
2. Amirpour, N., et al. 2013. Comparing three methods of co-culture of retinal pigment epithelium with progenitor cells derived human embryonic stem cells. *Int. J. Prev. Med.* 4: 1243-1250.

CONJUGATES

See **rhodopsin (1D4): sc-57432** for rhodopsin antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.