

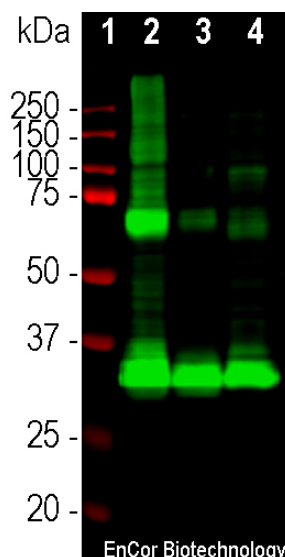
Ordering Information
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HGNC Name: RHO
UniProt: P08100
RRID: AB_2572378
Immunogen: Purified bovine rhodopsin
Format: Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM Na₂S₂O₅
Storage: Store at 4°C for short term, for longer term at -20°C.
Recommended dilutions:
WB:1:5,000. IF/ICC: 1:1,000. IHC: 1:2,000.

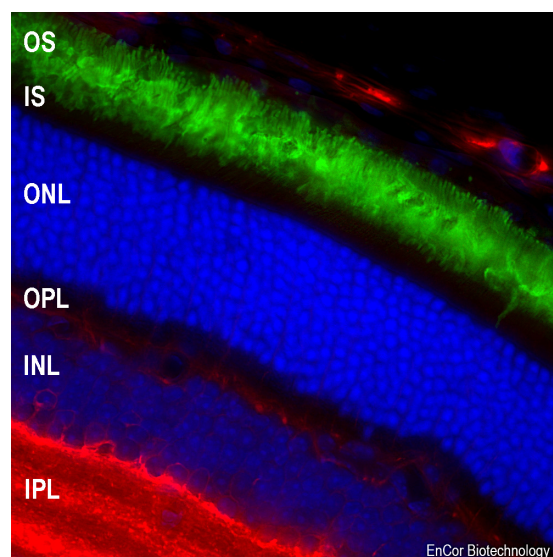
References:

1. Molday RS. Photoreceptor membrane proteins, phototransduction, and retinal degenerative disease. The Frienwald lecture. *Invest Ophthalmol Vis Sci.* 39:2491-513 (1998).
2. Yau, KW. Phototransduction Mechanism in Retinal Rods and Cones. The Frienwald lecture. *Invest Ophthalmol Vis Sci.* 35:9-32 (1994).
3. Wilden U, Hall SW, Kühn H. Phosphodiesterase activation by photoexcited rhodopsin is quenched when rhodopsin is phosphorylated and binds the intrinsic 48-kDa protein of rod outer segments. *Proc Natl Acad Sci USA* 83:1174-8 (1986).
4. Smith WC, et al. Identification of regions of arrestin that bind to rhodopsin. *Biochemistry Mar* 38:2752-61 (1999).
5. Adamus G, et al. Use of peptides to select for anti-rhodopsin antibodies with desired amino acid sequence specificities. *Pept. Res.* 1:42-7 (1988).

| Applications | Host | Isotype | Molecular Wt. | Species Cross-Reactivity |
|-----------------|-------|---------|---------------|--------------------------|
| WB, IF/ICC, IHC | Mouse | IgG1 | 35kDa | Hu, Rt, Ms, Co, Pi, Ho |



Western blot analysis of retina lysates from different species using mouse mAb to rhodopsin, MCA-A531, dilution 1:5,000 in green: [1] protein standard (red), [2] rat [3] mouse and [4] cow retina lysates. Strong band at 35kDa corresponds to rhodopsin protein. Bands about 70kDa and 140kDa result from the known tendency of rhodopsin to aggregate on SDS-PAGE gels.



Immunofluorescent analysis of mouse retina section stained with mouse mAb to rhodopsin, MCA-A531, dilution 1:2,000, in green, and costained with rabbit pAb to GAP43, RPCA-GAP43, dilution 1:1,000 in red. The blue is Hoechst staining of nuclear DNA. Rhodopsin antibody reveals rhodopsin protein in rod cell membranes located in outer segments of photoreceptors layer (OS) of retina. GAP43 antibody stains axons of neuronal cells in the inner plexiform layer (IPL), where it was present in three distinct bands.

Background:

Rhodopsin is the protein in the mammalian retina responsible for the light sensitivity of rod cells which are in turn responsible for vision in low light levels (1-4). Somewhat surprisingly, the rhodopsin protein turned out to be a typical member of the seven transmembrane **G protein-coupled receptor** (GPCR) superfamily. Whereas other GPCRs initiate signaling on binding a specific ligand, rhodopsin exists with a ligand already bound, specifically the **vitamin A** related substance **retinal**. The light causes a conformational change in the receptor bound retinal, which causes a conformational change to the rhodopsin molecule. This change in rhodopsin conformation then results in altered G protein signalling in the rod cell and ultimately to low light vision.

The MCA-A531 monoclonal antibody was made in mice against purified rhodopsin from bovine retina (5). The resulting hybridomas were screened by ELISA on purified bovine rhodopsin. Positive hybridoma were then re-screened on synthetic peptides based on bovine rhodopsin, so that peptide binding antibodies were effectively epitope mapped. The MCA-A531 epitope was found to reside in the N-terminal 32 amino acids of rhodopsin (5). The antibody works well for western blotting and for IF, ICC and IHC (for IHC see data under "Additional Info" tab). Another monoclonal antibody to rhodopsin developed in the same way and with an epitope mapped to the same region is **MCA-B630**. Currently MCA-B630 has been more widely used in peer-reviewed studies (see [here](#), although in other respects the two antibodies are comparable. MCA-A531 can be used to study rhodopsin expression both in sections and in western blots.

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Abbreviation Key:

mAb—Monoclonal Antibody **pAb**—Polyclonal Antibody **WB**—Western Blot **IF**—Immunofluorescence **ICC**—Immunocytochemistry
IHC—Immunohistochemistry **E**—ELISA **Hu**—Human **Mo**—Monkey **Do**—Dog **Rt**—Rat **Ms**—Mouse **Co**—Cow **Pi**—Pig **Ho**—Horse **Ch**—Chicken
Dr—*D. rerio* **Dm**—*D. melanogaster* **Sm**—*S. mutans* **Ce**—*C. elegans* **Sc**—*S. cerevisiae* **Sa**—*S. aureus* **Ec**—*E. coli*.