


Product datasheet

Anti-Rhodopsin antibody [1D4] ab5417

★★★★★ [4 Abreviews](#) [94 References](#) [6 Images](#)

Overview

Product name	Anti-Rhodopsin antibody [1D4]
Description	Mouse monoclonal [1D4] to Rhodopsin
Host species	Mouse
Specificity	ab5417 detects Rhodopsin from human and bovine retinal samples. Data from Yin J et al., 2012 (PMID 22743318) indicates that in Zebrafish ab5417 appears to recognize Red Opsin rather than Rhodopsin.
Tested applications	Suitable for: ELISA, IHC-FoFr, IP, WB, IHC-Fr, IHC-P, ICC/IF
Species reactivity	Reacts with: Mouse, Rat, Cow, Human, Zebrafish, Amphibian Predicted to work with: Rabbit 
Immunogen	Tissue, cells or virus corresponding to Bovine Rhodopsin. Bleached bovine ROS [rod outer segment] disk membranes
Epitope	The epitope for this antibody has been localized to the C-terminal nine amino acids of bovine rhodopsin known as the 1D4 epitope.
Positive control	WB: HL60 whole cell lysate IHC-P: Human and mouse retinal tissue
General notes	<p>The Life Science industry has been in the grips of a reproducibility crisis for a number of years. Abcam is leading the way in addressing this with our range of recombinant monoclonal antibodies and knockout edited cell lines for gold-standard validation. Please check that this product meets your needs before purchasing.</p> <p>If you have any questions, special requirements or concerns, please send us an inquiry and/or contact our Support team ahead of purchase. Recommended alternatives for this product can be found below, along with publications, customer reviews and Q&As</p>

Properties

Form	Liquid
Storage instructions	Shipped at 4°C. Store at +4°C short term (1-2 weeks). Upon delivery aliquot. Store at -20°C or -80°C. Avoid freeze / thaw cycle.
Storage buffer	Preservative: 0.05% Sodium azide Constituents: 99% PBS, 0.1% BSA
Purity	Protein G purified

Primary antibody notes

Vision involves the conversion of light into electrochemical signals that are processed by the retina and subsequently sent to and interpreted by the brain. The process of converting light to an electrochemical signal begins when the membrane-bound protein, rhodopsin, absorbs light within the retina. Photoexcitation of rhodopsin causes the cytoplasmic surface of the protein to become catalytically active. In the active state, rhodopsin activates transducin, a GTP binding protein. Once activated, transducin promotes the hydrolysis of cGMP by phosphodiesterase (PDE). The decrease of intracellular cGMP concentrations causes the ion channels within the outer segment of the rod or cone to close, thus causing membrane hyperpolarization and, eventually, signal transmission. Rhodopsin's activity is believed to be shut off by its phosphorylation followed by binding of the soluble protein arrestin.

Clonality

Monoclonal

Clone number

1D4

Isotype

IgG1

Applications

The Abpromise guarantee

Our **Abpromise guarantee** covers the use of ab5417 in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Application	Abreviews	Notes
ELISA		Use at an assay dependent concentration.
IHC-FoFr		Use at an assay dependent concentration. PubMed: 19587120
IP		Use at an assay dependent concentration.
WB	★★★★★ (2)	1/100 - 1/1000. Detects a band of approximately 40 kDa.
IHC-Fr	★★★★★ (1)	Use at an assay dependent concentration. PubMed: 22743318
IHC-P		1/100 - 1/1000.
ICC/IF	★★★★★ (1)	Use at an assay dependent concentration.

Target

Function

Photoreceptor required for image-forming vision at low light intensity. Required for photoreceptor cell viability after birth. Light-induced isomerization of 11-cis to all-trans retinal triggers a conformational change leading to G-protein activation and release of all-trans retinal.

Tissue specificity

Rod shaped photoreceptor cells which mediates vision in dim light.

Involvement in disease

Retinitis pigmentosa 4

Night blindness, congenital stationary, autosomal dominant 1

Sequence similarities

Belongs to the G-protein coupled receptor 1 family. Opsin subfamily.

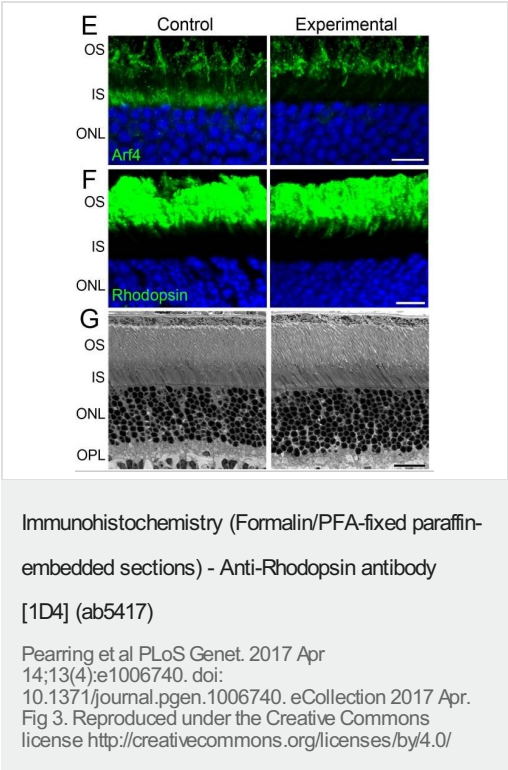
Post-translational modifications

Phosphorylated on some or all of the serine and threonine residues present in the C-terminal region.

Contains one covalently linked retinal chromophore.

Cellular localization	Membrane. Synthesized in the inner segment (IS) of rod photoreceptor cells before vectorial transport to the rod outer segment (OS) photosensory cilia.
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Images



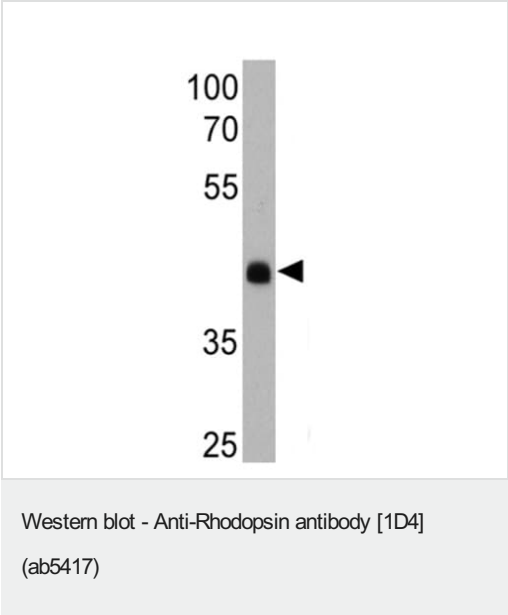
Deletion of Arf4 mice from the retina does not disrupt rhodopsin localization or photoreceptor morphology.

E. Arf4 immunostaining in *Arf4^{fllox}/CagCreER* experimental and control retinal cross-sections. Image of the photoreceptor IS where the biosynthetic membranes are localized. Eyes were collected at P34. Scale bar = 10 μm.

F. Rhodopsin immunostaining in *Arf4^{fllox}/CagCreER* experimental and control retinal cross-sections. Eyes were collected at P34. Scale bar = 10 μm.

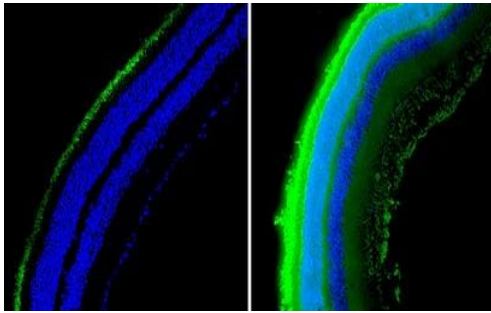
G. Comparative analysis of photoreceptor morphology in *Arf4^{fllox}/CagCreER* experimental and control retinal cross-sections. Eyes were collected at P41. Scale bar = 20 μm.

OS = outer segment, IS = inner segment, ONL = outer nuclear layer, OPL = outer plexiform layer.



Anti-Rhodopsin antibody [1D4] (ab5417) at 1/500 dilution + HL60 (Human promyelocytic leukemia cell line) cell lysate at 25 μg

Observed band size: 40 kDa

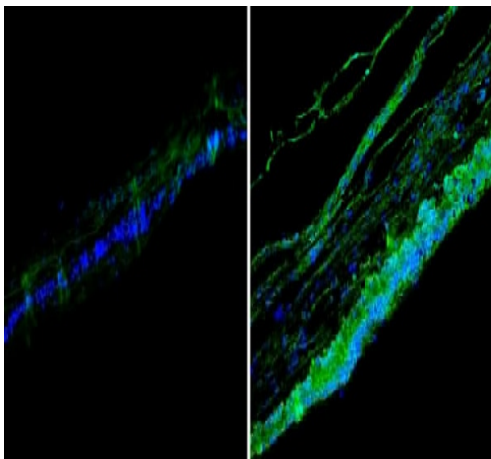


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Rhodopsin antibody [1D4] (ab5417)

Immunohistochemical analysis of formalin-fixed mouse retinal tissue, labeling rhodopsin with ab5417 at a 1:50 dilution in 3% BSA-PBS solution and incubated at 4°C overnight in a high humidity environment.

A DyLight® 488 secondary antibody was used (green) incubated at room temperature in the dark. The tissue was counterstained with DAPI against DNA, showing nuclear compartments. Prior to staining the formalin-fixed tissue was permeabilized with 0.1% Triton X-100 in TBS for between 5 and 10 minutes, then blocked with 3% BSA-PBS for 30 minutes at room temperature.

The left image is a negative control with only the secondary antibody and the right image is in the presence of ab5417 and the secondary.

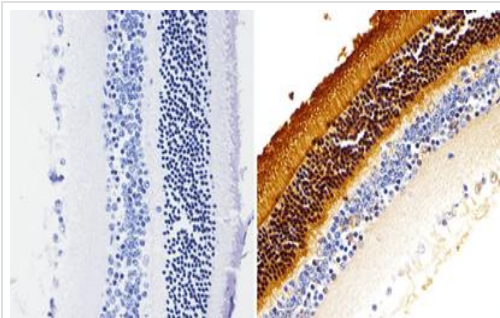


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Rhodopsin antibody [1D4] (ab5417)

Immunohistochemical analysis of formalin-fixed human retinal tissue, labeling rhodopsin with ab5417 at a 1:50 dilution in 3% BSA-PBS solution and incubated at 4°C overnight in a high humidity environment.

A DyLight® 488 secondary antibody was used (green) incubated at room temperature in the dark. The tissue was counterstained with DAPI against DNA, showing nuclear compartments. Prior to staining the formalin-fixed tissue was permeabilized with 0.1% Triton X-100 in TBS for between 5 and 10 minutes, then blocked with 3% BSA-PBS for 30 minutes at room temperature.

The left image is a negative control with only the secondary antibody and the right image is in the presence of ab5417 and the secondary.

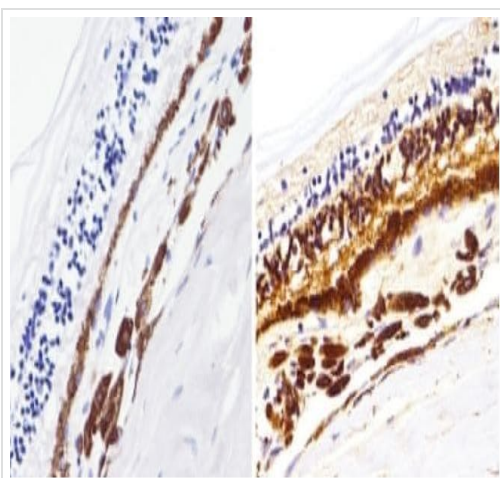


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Rhodopsin antibody [1D4] (ab5417)

Immunohistochemical analysis of paraffin-embedded mouse retinal tissue labeling Rhodopsin with ab5417.

Secondary used was HRP conjugated. Prior preparation was initiated by antigen retrieval using 10mM sodium citrate at pH 6.0, then the sample was microwaved for 8 to 15 minutes. Subsequent to retrieval the retinal tissue was blocked for 15 minutes at room temperature with 3% hydrogen peroxide. The sample was then incubated with ab5417 in 3% BSA-PBS at 4°C at a dilution of 1:1000, overnight. Hematoxylin was used to counterstain the tissue.

The left side of the image is shown as a negative control and is the tissue in the absence of ab5417, the right side is in the presence of the counterstain, ab5417 and the HRP conjugated secondary.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Rhodopsin antibody [1D4] (ab5417)

Immunohistochemical analysis of paraffin-embedded human retinal tissue labeling Rhodopsin with ab5417.

Secondary used was HRP conjugated. Prior preparation was initiated by antigen retrieval was performed using 10mM sodium citrate (pH 6.0), microwaved for 8-15 min. Subsequent to retrieval the retinal tissue was blocked in 3% H₂O₂-methanol for 15 min at room temperature. The sample was then incubated with ab5417 in 3% BSA-PBS at a dilution of 1:200 overnight at 4°C, overnight. Hematoxylin was used to counterstain the tissue.

The left side of the image is shown as a negative control and is the tissue in the absence of ab5417, the right side is in the presence of the counterstain, ab5417 and the HRP conjugated secondary.

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