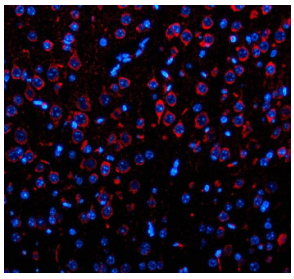
OPN3 Antibody / Opsin 3 (FY13049)

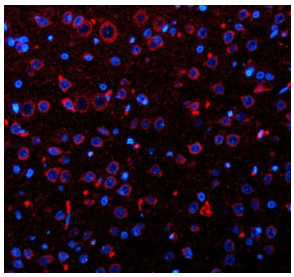
Catalog No.	Formulation	Size
FY13049	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human, Mouse, Rat
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	Q9H1Y3
Localization	Cytoplasm, cell membrane
Applications	Western Blot: 0.25-0.5ug/ml Immunohistochemistry: 2-5ug/ml Immunofluorescence: 5ug/ml
Limitations	This OPN3 antibody is available for research use only.



Immunofluorescent staining of OPN3 using anti-OPN3 antibody. OPN3 was detected in a paraffin-embedded section of mouse brain tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 5 ug/ml rabbit anti-OPN3 antibody overnight at 4oC. Cy3 Conjugated Goat Anti-Rabbit IgG was used as secondary antibody at 1:500 dilution and incubated for 30 minutes at 37oC. The section was counterstained with DAPI nuclear stain (blue). Visualize using a fluorescence microscope and filter sets appropriate for the label used.



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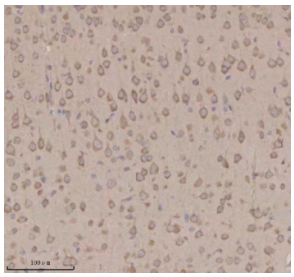
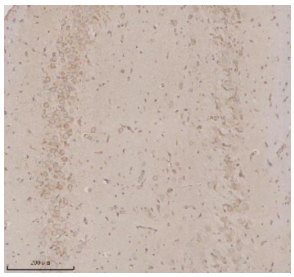


Immunohistochemical staining of OPN3 using anti-OPN3 antibody. OPN3 was detected in a paraffin-embedded section of mouse brain tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-OPN3 antibody overnight at 4oC. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37oC. The tissue section was developed using an HRP secondary and DAB substrate.



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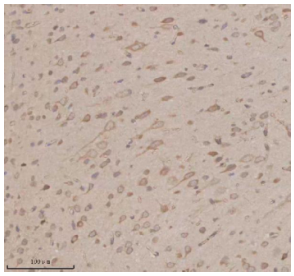

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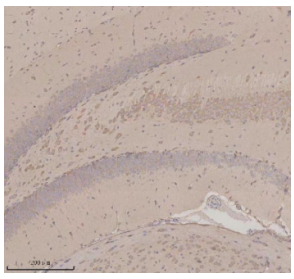

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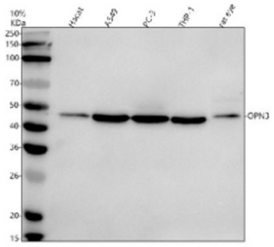

Western blot analysis of OPN3 using anti-OPN3 antibody. Electrophoresis was performed on a 10% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. Lane 1: human Hacat whole cell lysates, Lane 2: human whole cell lysates, Lane 3: human PC-3 whole cell lysates, Lane 4: human THP-1 whole cell lysates, Lane 5: rat eye tissue lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-OPN3 antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using an ECL Plus Western Blotting Substrate. A specific band was detected for OPN3 at approximately 45 kDa. The expected molecular weight of OPN3 is ~45 kDa.

Description

OPN3 antibody detects Opsin-3, a light-sensitive G protein-coupled receptor (GPCR) that belongs to the opsin subfamily of photoreceptors. The UniProt recommended name is Opsin-3 (OPN3). This protein, also known as encephalopsin or panopsin, functions as a non-visual opsin that may mediate light-sensitive signaling in neural and peripheral tissues.

Functionally, OPN3 antibody identifies a 402-amino-acid seven-transmembrane GPCR that binds retinal chromophore and activates intracellular signaling pathways in response to light or metabolic cues. OPN3 couples to heterotrimeric G proteins, influencing cyclic nucleotide levels, calcium signaling, and other downstream responses. Its activity extends beyond traditional photoreception, integrating environmental light signals into physiological regulation of circadian rhythm, metabolism, and hormone secretion.

The OPN3 gene is located on chromosome 1q43 and encodes a protein expressed in brain, skin, testis, and adipose tissue. OPN3 is localized primarily in cell membranes and intracellular vesicles, suggesting context-dependent signaling functions. In the brain, it may modulate neuronal excitability and metabolic responses to light exposure. In skin, OPN3 contributes to phototransduction in melanocytes and keratinocytes, influencing pigmentation and UV response.

Emerging evidence implicates OPN3 in non-visual light sensing that affects circadian entrainment, energy homeostasis, and mood regulation. It may act as a photoreceptor for near-infrared or blue light, mediating cellular adaptation to environmental illumination. In metabolic tissues, OPN3 modulates lipid metabolism and thermogenesis, linking light exposure to systemic energy balance. OPN3 has also been studied for its potential role in reproductive physiology and skin photobiology.

OPN3 antibody is widely used in photoreceptor biology, neuroendocrinology, and GPCR signaling research. It is suitable for immunofluorescence, western blotting, and immunohistochemistry to detect OPN3 localization in neural, skin, and endocrine tissues. This antibody supports research into light-mediated signaling, opsin evolution, and photoregulated physiology. In biomedical studies, OPN3 serves as a molecular link between light sensing and metabolic control.

Structurally, OPN3 exhibits the canonical GPCR topology with seven transmembrane helices, an extracellular retinal-binding lysine, and cytoplasmic domains that interact with G proteins. NSJ Bioreagents provides OPN3 antibody reagents validated for use in light signaling, GPCR function, and circadian regulation research.

Application Notes

Optimal dilution of the OPN3 antibody should be determined by the researcher.

Immunogen

A synthetic peptide corresponding to a sequence in the middle region of human OPN3 was used as the immunogen for the OPN3 antibody.

Storage

After reconstitution, the OPN3 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

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