

## Anti-Aquaporin 4/AQP4 Antibody Picoband®

Catalog Number: PB9475

### About AQP4

Aquaporin 4 is found in the basolateral cell membrane of principal collecting duct cells and provides a pathway for water to exit these cells. The gene of AQP4 is mapped to 18q11.2-q12.1. Similar to other aquaporins, the AQP4 gene is composed of 4 exons encoding 127, 55, 27, and 92 amino acids separated by introns of 0.8, 0.3, and 5.2 kb. Unlike other aquaporins, an alternative coding initiation sequence (designated exon 0) was located 2.7 kb upstream of exon 1. When spliced together, M1 and the subsequent 10 amino acids are encoded by exon 0; the next 11 amino acids and M23 are encoded by exon 1. AQP4 is expressed in astrocytes and is upregulated by direct insult to the central nervous system. And AQP4 is the predominant water channel in the brain and has an important role in brain water homeostasis. It is abundant in mammalian brain and is concentrated in astrocytic foot processes at the blood-brain barrier.

### Overview

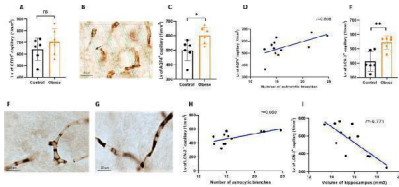
Product Name	Anti-Aquaporin 4/AQP4 Antibody Picoband®
Reactive Species	Human, Mouse, Rat, Zebrafish
Description	Boster Bio Anti-Aquaporin 4/AQP4 Antibody Picoband® catalog # PB9475. Tested in IHC, WB applications. This antibody reacts with Human, Mouse, Rat, Zebrafish. The brand Picoband indicates this is a premium antibody that guarantees superior quality, high affinity, and strong signals with minimal background in Western blot applications. Only our best-performing antibodies are designated as Picoband, ensuring unmatched performance.
Application	IHC, WB
Clonality	Polyclonal
Formulation	Each vial contains 4 mg Trehalose, 0.9 mg NaCl and 0.2 mg Na <sub>2</sub> HPO <sub>4</sub> .
Storage Instructions	Store at -20°C for one year from date of receipt. After reconstitution, at 4°C for one month. It can also be aliquotted and stored frozen at -20°C for six months. Avoid repeated freeze-thaw cycles.
Host	Rabbit
Uniprot ID	P55087

### Technical Details

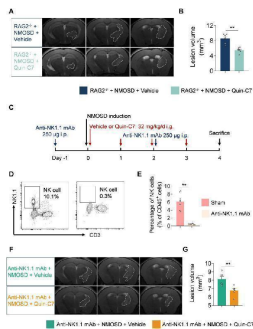
Immunogen	A synthetic peptide corresponding to a sequence at the C-terminus of human Aquaporin 4, different from the related mouse sequence by two amino acids, and from the related rat sequence by three amino acids.
Recommended Detection Systems	Boster recommends Enhanced Chemiluminescent Kit with anti-Rabbit IgG (EK1002) for Western blot, and HRP Conjugated anti-Rabbit IgG Super Vision Assay Kit (SV0002-1) for IHC(P) and IHC(F).
Cross Reactivity	No cross-reactivity with other proteins

Isotype	Rabbit IgG
Form	Lyophilized
Concentration	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml.
Purification	Immunogen affinity purified.
Suggested Dilutions	Western blot, 0.1-0.5ug/ml, Mouse, Rat Immunohistochemistry (Paraffin-embedded Section), 2-5ug/ml, Human, Mouse, Rat, Zebrafish Immunohistochemistry (Frozen Section), 0.5-1ug/ml, Mouse, Rat

## Anti-Aquaporin 4/AQP4 Antibody Picoband® (PB9475) Images

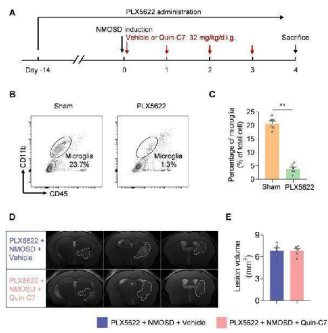


Effects of maternal obesity on the hippocampal vascularization and coverage of capillaries by end-feet of astrocytes in offspring: no significant difference in the length density of CD31 + capillaries between two groups of mice ( A ); an example of the length density of AQP4 + capillaries measurement. The green lines (arrow) represent the intersection between isotropic virtual plane and the focal plane. Capillaries that are in focus and intersected by virtual planes are counted as positive AQP4. For estimating the reference volume, we use the four corner points of the box. Scale bar = 20  $\mu$ m ( B ); a significant higher coverage of capillaries with end-feet of astrocytes ( A ) without changes in vascularization in offspring of obese dams ( C ); a significant positive correlation between length density of AQP4 + capillaries and number of astrocytic branches ( D ); a significant higher endothelial expression of LCN2, suggesting longer LCN2 + capillaries, in the hippocampus of offspring of obese dams ( E ); examples of hippocampal endothelial LCN2 expression in the offspring of control ( F ) and obese dams ( G ). Scale bar = 20  $\mu$ m; a significant positive correlation between length density of LCN2 + capillaries and number of astrocytic branches ( H ); a significant negative correlation between length density of LCN2 + capillaries and volume of hippocampus ( I ). \* p

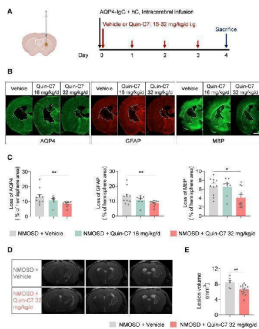


T cells, B cells and NK cells are not involved in the benefit of FPR2 antagonism in NMO/MSD mice. ( A ) 9.4T-T2 weighted MR images showing brain lesions within the axial position in RAG2 -/- NMO/MSD mice treated with vehicle or Quin-C7 (32 mg/kg/day). ( B ) Bar graph showing the volumes of intracranial lesions in RAG2 -/- NMO/MSD mice treated with vehicle or Quin-C7 (32 mg/kg/day). ( C ) Schematic diagram depicts experimental design. NMO/MSD was induced in NK depleted mice by intracerebral injection of AQP4-IgG with hC. Thereafter, these mice received daily administration of Quin-C7 (32 mg/kg) or an equal volume of vehicle for 4 consecutive days starting immediately after NMO/MSD induction. On day 4 after NMO/MSD, the imaging analysis was performed. For NK cell depletion, mice were injected i.p. with 250  $\mu$ g anti-NK1.1 mAb or isotype control every three days, the first time was injected one day before NMO/MSD induction. ( D-E ) Flow cytometry gating strategy ( D ) and quantification of NK cell percentage ( E ) in the peripheral blood of mice with or without anti-NK1.1 mAb treatment. n = 6 per group. ( F ) Representative 9.4T-T2 weighted MR images showing brain lesions within the axial position in indicated groups of NMO/MSD mice. ( G ) The histogram shows the volumes of intracranial lesions in indicated groups of NMO/MSD mice. Data are presented as mean  $\pm$  SEM. \*\* p < 0.01. Index in PubMed under a CC BY license. PMID: 40225578

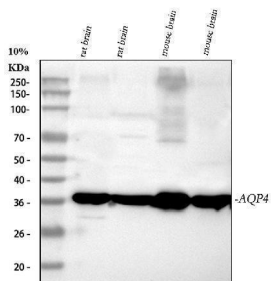
Microglia contribute to the benefit of FPR2 antagonism in



NMOSD mice. ( A ) Schematic diagram illustrates drug administration and experimental design. C57BL/6 mice received oral gavage of PLX5622 for 14 days and continuously until the experiment ended. NMOSD was induced in PLX5622-treated mice by intracerebral injection of AQP4-IgG with hC. Thereafter, these mice received daily administration of Quin-C7 (32 mg/kg) or an equal volume of vehicle for 4 consecutive days starting immediately after NMOSD induction. On day 4 after NMOSD, the imaging analysis was performed. ( B - C ) Flow cytometry gating strategy ( B ) and bar graph ( C ) showing microglia percentage in the brain tissues obtained from mice receiving a control diet or PLX5622 for 14 days.  $n = 6$  per group. ( D ) 9.4T-T2 weighted MR images showing brain lesions within the axial position in indicated groups of NMOSD mice. ( E ) Bar graph showing the volumes of intracranial lesions in indicated groups of NMOSD mice. Data are presented as mean  $\pm$  SEM. \*\*  $P < 0.01$ . Index in PubMed under a CC BY license. PMID: 40225578

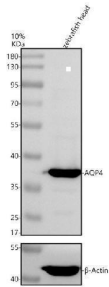


FPR2 antagonism reduces NMOSD pathology in mice. ( A ) Schematic diagram depicts experimental design. Mice received daily gavage administration of different dosages of Quin-C7 or an equal volume of vehicle for four consecutive days, starting immediately after NMOSD induction. Mouse brain tissue was collected for immunostaining analysis on day 4 post-NMOSD. ( B ) Immunostaining shows the expression of AQP4, GFAP, and MBP in indicated groups of NMOSD mice, white lines represent the area with the loss of AQP4, GFAP and MBP. Scale bar: 1mm. ( C ) Bar graphs showing the loss of AQP4, GFAP and MBP.  $n = 8-11$  mice per group. ( D ) 9.4T-T2 weighted MR images showing brain lesions within the axial position in vehicle or Quin-C7-treated (32 mg/kg/day) NMOSD mice on day 4. ( E ) Bar graph showing the intracranial lesion volumes of the vehicle or Quin-C7-treated (32 mg/kg/day) NMOSD mice. Data are presented as mean  $\pm$  SEM. \*  $P < 0.05$ , \*\*  $P < 0.01$ . Index in PubMed under a CC BY license. PMID: 40225578

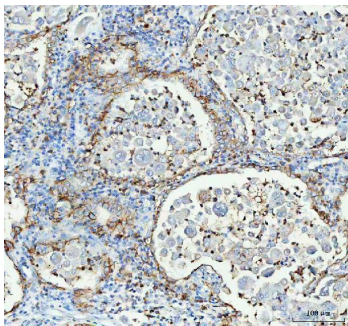


Western blot analysis of Aquaporin 4 using anti-Aquaporin 4 antibody (PB9475). Electrophoresis was performed on a 5-20% SDS-PAGE gel at 70V (Stacking gel) / 90V (Resolving gel) for 2-3 hours. The sample well of each lane was loaded with 30 ug of sample under reducing conditions. Lane 1: rat brain tissue lysates, Lane 2: rat brain tissue lysates, Lane 3: mouse brain tissue lysates, Lane 4: mouse brain 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-Aquaporin 4 antigen affinity purified polyclonal antibody (Catalog # PB9475) at 0.5 ug/mL overnight at 4°C, 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 is developed using an Enhanced Chemiluminescent detection (ECL) kit (Catalog # EK1002) with Tanon 5200 system. A specific band was detected for Aquaporin 4 at

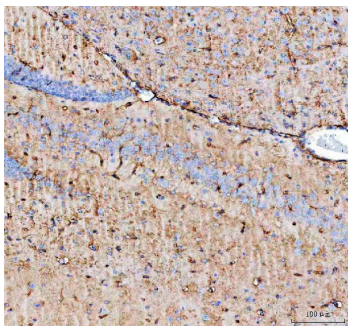
approximately 37 kDa. The expected band size for Aquaporin 4 is at 35 kDa.



Western blot analysis of AQP4 using anti-AQP4 antibody (PB9475). Electrophoresis was performed on a 10% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. The sample well of each lane was loaded with 30 ug of sample under reducing conditions. Lane 1: Zebrafish head 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-AQP4 antigen affinity purified polyclonal antibody (PB9475) at 0.5 ug/ml overnight at 4°C, then washed with TBS-0.1%Tween-20 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody (Catalog # BA1054) at a dilution of 1:5000 for 1.5 hour at RT. The signal is developed using an ECL Plus Western Blotting Substrate (Catalog # AR1196-200) with Tanon 5200 system. A specific band was detected for AQP4 at approximately 37 kDa. The expected band size for AQP4 is at 37 kDa.

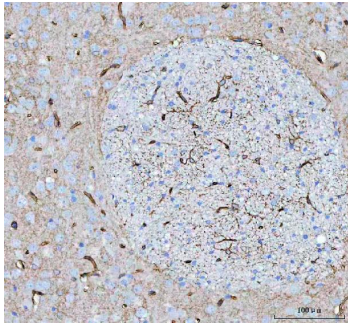


IHC analysis of Aquaporin 4 using anti-Aquaporin 4 antibody (PB9475). Aquaporin 4 was detected in a paraffin-embedded section of human lung cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-Aquaporin 4 Antibody (PB9475) overnight at 4°C. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Rabbit IgG Super Vision Assay Kit (Catalog # SV0002) with DAB as the chromogen.

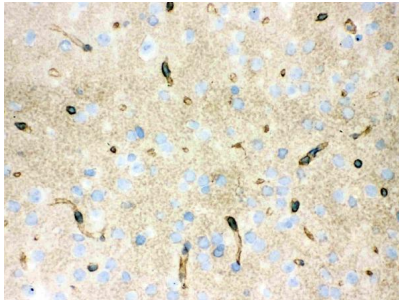


IHC analysis of Aquaporin 4 using anti-Aquaporin 4 antibody (PB9475). Aquaporin 4 was detected in a paraffin-embedded section of mouse brain tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-Aquaporin 4 Antibody (PB9475) overnight at 4°C. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Rabbit IgG Super Vision Assay Kit (Catalog # SV0002) with DAB as the chromogen.

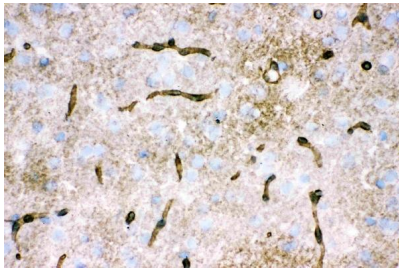
IHC analysis of Aquaporin 4 using anti-Aquaporin 4 antibody (PB9475). Aquaporin 4 was detected in a paraffin-embedded section of rat brain tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-Aquaporin 4 Antibody (PB9475) overnight at 4°C.



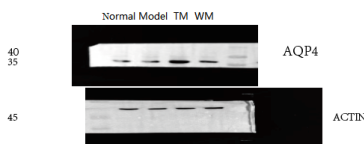
Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Rabbit IgG Super Vision Assay Kit (Catalog # SV0002) with DAB as the chromogen.



IHC analysis of Aquaporin 4 using anti-Aquaporin 4 antibody (PB9475). Aquaporin 4 was detected in frozen section of Mouse Brain Tissue. The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 1ug/ml rabbit anti-Aquaporin 4 Antibody (PB9475) overnight at 4°C. Biotinylated goat anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC)(Catalog # SA1022) with DAB as the chromogen.



IHC analysis of Aquaporin 4 using anti-Aquaporin 4 antibody (PB9475). Aquaporin 4 was detected in frozen section of Rat Brain Tissue. The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 1ug/ml rabbit anti-Aquaporin 4 Antibody (PB9475) overnight at 4°C. Biotinylated goat anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC)(Catalog # SA1022) with DAB as the chromogen.



Western blot analysis of Aquaporin 4 using anti-Aquaporin 4 antibody (PB9475). Electrophoresis was performed on a 5-20% SDS-PAGE gel at 70V (Stacking gel) / 90V (Resolving gel) for 2-3 hours. The sample well of each lane was loaded with 30 ug of sample under reducing conditions. Lane 1: Normal group-rat colon tissue lysates, Lane 2: Model group-rat colon tissue lysates, Lane 3: Traditional Chinese medicine-rat colon tissue lysates, Lane 4: Western medicine-rat colon 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-Aquaporin 4 antigen affinity purified polyclonal antibody (Catalog # PB9475) at 1:1000 overnight at 4°C, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody for 1 hour at RT. The signal is developed using an Enhanced Chemiluminescent detection (ECL) kit (Catalog # EK1002) with ChemiDoc MP system. A specific band was detected for Aquaporin 4 at approximately 37 kDa. The expected band size for Aquaporin 4 is at 35 kDa.

1. PubMed ID: 10.3171/2008.4.JNS17512, Brain edema after intracerebral hemorrhage in rats: the role of iron overload and aquaporin 4: Laboratory investigation
2. PubMed ID: 10.1096/fj.202100673R, Group 2 innate lymphoid cells suppress the pathology of neuromyelitis optica spectrum disorder
3. PubMed ID: 10.1080/09291016.2021.2007329, Expression of AQP1, AQP3, AQP4 and AQP5 in upper respiratory tract of buffaloes during different seasons

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