SYSY Antibodies

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Aquaporin4

Cat.No. 429 004; Polyclonal Guinea pig antibody, 100 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µl antiserum, lyophilized. For **reconstitution** add 100 µl H_2O, then aliquot and store at -20°C until use. Antibodies should be stored at +4°C when still lyophilized. Do not freeze! For detailed information, see back of the data sheet.
Applications	**WB**: 1 : 5000 up to 1 : 10000 (AP staining) **IP**: yes **ICC**: 1 : 1000 **IHC**: 1 : 500 up to 1 : 1000 **IHC-P (FFPE)**: 1 : 1000
Immunogen	Recombinant protein corresponding to residues near the carboxy terminus of mouse Aquaporin-4 isoform 2 (UniProt Id: P55088-1)
Reactivity	Reacts with: rat (P47863), mouse (P55088-1). Other species not tested yet.
Specificity	Specific for Aquaporin- 4, detects all described isoforms.
Matching control	429-0P

TO BE USED IN VITRO / FOR RESEARCH ONLY
NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

Background

Aquaporin 4 (AQP4) is the most abundant bidirectional water-channel in the central nervous system. It is particularly abundant in astrocytes, where it is highly concentrated in the perivascular end-feet surrounding blood vessels and at the interfaces between brain tissue and cerebrospinal fluid (1). AQP4 is also expressed in ependymal cells and, outside the CNS, in tissues including the kidney, skeletal muscle, lung, stomach and several glandular epithelia (2,3).
It contributes to the regulation of water and ion homeostasis, extracellular volume, brain edema and blood–brain barrier function. AQP4 is also an important component of the glymphatic system, which facilitates the movement and clearance of substances through the brain interstitial space (1,4).
Alterations in AQP4 expression or localization have been implicated in a number of pathological conditions including neuroinflammation, brain edema, traumatic brain injury, neurodegenerative disorders and neuromyelitis optica spectrum disorders (NMOSD)(4).

For more information on protein expression pattern, please refer to the overview image in our SYSY Antibodies ATLAS.

Selected References for 429 004

Vascular Development of Fetal and Postnatal Neocortex of the Pig, the European Wild Boar Sus scrofa.
Sobierajski E, Czubay K, Beemelmans C, Beemelmans C, Meschkat M, Uhlenkamp D, Meyer G, Wahle P
The Journal of comparative neurology (2024) 53212: e70011. . **WB, IHC; tested species: pig**

Adenosine A2A Receptors Control the Mis-Localization of Aquaporin-4 in Rats Subject to Repeated Restraint Stress.
Dias L, Ferreira SG, Nabais AM, Silva J, Cunha RA, Agostinho P
Journal of neurochemistry (2026) 1704: e70450. . **WB, IHC; tested species: rat**

Microglia dysfunction, neurovascular inflammation and focal neuropathologies are linked to IL-1- and IL-6-related systemic inflammation in COVID-19.
Fekete R, Simats A, Bíró E, Pósfai B, Cserép C, Schwarcz AD, Szabadits E, Környei Z, Tóth K, Fichó E, Szalma J, et al.
Nature neuroscience (2025) 283: 558-576. . **IHC-P; tested species: human**

40 Hz light flickering facilitates the glymphatic flow via adenosine signaling in mice.
Sun X, Dias L, Peng C, Zhang Z, Ge H, Wang Z, Jin J, Jia M, Xu T, Guo W, Zheng W, et al.
Cell discovery (2024) 101: 81. . **IP; tested species: mouse**

Astrocyte TrkB promotes brain injury and edema formation in ischemic stroke.
Colombo E, Bacigaluppi M, Bartoccetti M, Triolo D, Bassani C, Bergamaschi A, Descamps HC, Gullotta GS, Henley M, Piccoli M, Anastasia L, et al.
Neurobiology of disease (2024) 201: 106670. . **IHC; tested species: mouse**

INSIHGT: an accessible multi-scale, multi-modal 3D spatial biology platform.
Yau CN, Hung JTS, Campbell RAA, Wong TCY, Huang B, Wong BTY, Chow NKN, Zhang L, Tsoi EPL, Tan Y, Li JJX, et al.
Nature communications (2024) 151: 10888. . **IHC; tested species: human**

Microglia directly associate with pericytes in the central nervous system.
Morris GP, Foster CG, Courtney JM, Collins JM, Cashion JM, Brown LS, Howells DW, DeLuca GC, Canty AJ, King AE, Ziebell JM, et al.
Glia (2023) : . . **IHC; tested species: mouse**

Evaluation of gliovascular functions of Aqp4 readthrough isoforms.
Mueller SM, White KM, Fass SB, Chen S, Shi Z, Ge X, Engelbach JA, Gaines SH, Bice AR, Vasek MJ, Garbow JR, et al.
bioRxiv : the preprint server for biology (2023) : . . **WB; tested species: mouse**

The NKCC1 ion transporter modulates microglial phenotype and inflammatory response to brain injury in a cell-autonomous manner.
Tóth K, Lénárt N, Berki P, Fekete R, Szabadits E, Pósfai B, Cserép C, Alatshan A, Benkő S, Kiss D, Hübner CA, et al.
PLoS biology (2022) 201: e3001526. . **IHC; tested species: mouse**

Access the online factsheet including applicable protocols at https://sysy.com/product/429004 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All SYSY antibodies and control proteins/peptides are shipped lyophilized (vacuum freeze-dried). In this form, they remain stable without loss of quality at ambient temperatures for several weeks.

Storage of Sealed Vials after Delivery

- **Unlabeled** and **biotin-labeled antibodies** and **control proteins** should be stored at **4°C** before reconstitution. **Do not freeze lyophilized antibodies**. Temperatures below 0°C may impair performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long-term storage of lyophilized fluorophore-conjugates may cause aggregation.
- **Control peptides** should be stored at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- **Do not use frost-free ("no-frost") freezers.** These units periodically warm to remove ice buildup, causing freeze–thaw cycles that can damage antibodies.
- Store vials in areas with minimal temperature fluctuation - preferably toward the back of the freezer, not on the door.
- Aliquot reconstituted antibodies and store at –20°C to –80°C.
- Avoid very small aliquots (<20 µL), as evaporation and adsorption to tube surfaces can reduce antibody concentration and activity.
- Use the smallest practical storage vial to minimize surface area.
- Adding glycerol to a final concentration of 50% prevents freezing at -20°C, allowing storage in liquid form and effectively avoiding freeze–thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C

Monoclonal Antibodies

- **Ascites and hybridoma supernatant:** Store at -20°C to -80°C
  Prolonged storage at 4°C is not recommended, as proteases present in ascites may degrade antibodies.
- **Purified IgG:** Store at -20°C to -80°C
  Adding a carrier protein (e.g., BSA) enhances long-term stability.
  Many SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Polyclonal Antibodies

- **Crude antisera:** Can be stored at 4°C with antimicrobials added, but -20°C to -80°C is preferred
- **Affinity-purified antibodies:** Less stable than antisera; store at -20°C to -80°C
  Adding a carrier protein such as BSA improves long-term stability.
  Most SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Fluorescence-labeled Antibodies

- Store as a liquid with 1:1 (v/v) glycerol at -20°C, and protect from light exposure

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All purified SYSY antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the volume of deionized water specified in the corresponding datasheet. If a larger final volume is desired, first add the recommended amount of water, then adjust with PBS and, if needed, add a stabilizing carrier protein (e.g., BSA) to a final concentration of 2%. Some SYSY antibodies already contain albumin; please take this into account before adding additional carrier protein.

For complete reconstitution, carefully remove the vial cap. After adding water, briefly vortex the solution. To collect the liquid at the bottom of the vial, place the vial inside a 50 ml centrifuge tube padded with paper and centrifuge briefly.

- If desired, small amounts of azide or thimerosal may be added to prevent microbial growth. This is particularly recommended when storing an aliquot at 4°C.
- After reconstitution of fluorescence-labeled antibodies, add glycerol 1:1 (v/v) to achieve a final concentration of 50%. This prevents freezing at –20°C and keeps the antibody in liquid form, effectively avoiding freeze–thaw cycles.
- Glycerol may also be added to unlabeled primary antibodies as a general measure to prevent freeze–thaw damage.
- For further guidance, please refer to our **storage tips** and recommendations for reconstituted antibodies, control peptides, and control proteins.