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#59678**AQP4 (D1F8E) XP[®] Rabbit mAb**

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications: W, W-S, IP, IHC-P, IF-F, IF-IC	Reactivity: H M R	Sensitivity: Endogenous	MW (kDa): 28	Source/Isotype: Rabbit IgG	UniProt ID: #P55087	Entrez-Gene Id: 361
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Product Usage Information**Application**

Western Blotting
Simple Western™
Immunoprecipitation
Immunohistochemistry (Paraffin)
Immunofluorescence (Frozen)
Immunofluorescence (Immunocytochemistry)

Dilution

1:1000
1:50 - 1:250
1:100
1:50 - 1:200
1:800 - 1:3200
1:1600

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C. Do not aliquot the antibody.

For a carrier free (BSA and azide free) version of this product see product #39374.

Specificity/Sensitivity

AQP4 (D1F8E) XP[®] Rabbit mAb recognizes endogenous levels of total AQP4.

Source / Purification

Monoclonal antibody is produced by immunizing animals with recombinant protein specific to the carboxy terminus of human AQP4 protein.

Background

Aquaporins (AQP) are integral membrane proteins that serve as channels in the transfer of water and small solutes across the membrane. There are 13 isoforms of AQP that express in different types of cells and tissues (1,2). AQP1 is found in blood vessels, kidney, eye, and ear. AQP2 is found in the kidney, and it has been shown that the lack of AQP2 results in diabetes (1,3). AQP4 is present in the brain, where it is enriched in astrocytes (1,2,4). AQP5 is found in the salivary and lacrimal gland, AQP6 in intracellular vesicles in the kidney, AQP7 in adipocytes, AQP8 in kidney, testis, and liver, AQP9 is present in liver and leukocytes, and AQP10-11 in the intestine (1,3,4). AQPs are essential for the function of cells and organs. It has been shown that AQP1 and AQP4 regulate the water homeostasis in astrocytes, preventing cerebral edema caused by solute imbalance (5). Several studies have shown the involvement of AQPs in the development of inflammatory processes, including cells of innate and adaptive immunity (6,7).

AQP4 is expressed in brain cells, including neurons, but enriched in astrocytes, as well as in the peripheral nervous system (4,7). AQP4 influences synaptic plasticity and the lack of this protein in the brain may cause memory and learning impairment via glutamate transporter 1 (GLT1) in Alzheimer's disease (8,9,10). It's suggested that AQP4 could play a role in the clearance of β-amyloid, and it may influence the transport of potassium and calcium in Alzheimer's disease (8,9). In Parkinson's disease, the lack of AQP4 results in an increased susceptibility of neurons from the substantia nigra and the ventral tegmental area for MPTP (11).

Background References

1. Takata, K. et al. (2004) *Prog Histochem Cytochem* 39, 1-83.
2. Echevarría, M. and Ilundáin, A.A. (1998) *J Physiol Biochem* 54, 107-18.
3. Gomes, A. et al. (2018) *Front Chem* 6, 238.
4. Xu, M. et al. (2017) *Adv Exp Med Biol* 969, 81-103.
5. Kobayashi, H. et al. (2004) *J Pharmacol Sci* 96, 264-70.
6. Meli, R. et al. (2018) *Front Physiol* 9, 101.
7. Ishibashi, K. et al. (1998) *Biochem Biophys Res Commun* 244, 268-74.
8. Hubbard, J.A. et al. (2018) *Brain Res Bull* 136, 118-129.
9. Lan, Y.L. et al. (2016) *Neural Plast* 2016, 4626593.
10. Lan, Y.L. et al. (2016) *Mol Neurobiol* 53, 5300-9.
11. Zhang, J. et al. (2016) *Neurosci Lett* 614, 7-15.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween@ 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting **W-S:** Simple Western™ **IP:** Immunoprecipitation **IHC-P:** Immunohistochemistry (Paraffin) **IF-F:** Immunofluorescence (Frozen) **IF-IC:** Immunofluorescence (Immunocytochemistry)

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat

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