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GFAP

Cat.No. 173 011; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified IgG, lyophilized. Albumin and azide were added for stabilization. For **reconstitution** add 100 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°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 : 1000 (AP staining) (see remarks) **IP**: yes **ICC**: 1 : 500 up to 1 : 1000 **IHC**: 1 : 200 up to 1 : 1000 **IHC_P**: 1 : 2000 up to 1 : 4000 **CLARITY**: 1 : 200 video (see remarks) **ELISA**: yes (see remarks)
Clone	134B1
Subtype	IgG2a (κ light chain)
Immunogen	full-length recombinant human GFAP (UniProt Id: P14136)
Epitop	Epitop: AA 391 to 405 from human GFAP (UniProt Id: P14136)
Reactivity	Reacts with: human (P14136), rat (P47819), mouse (P03995), cow. No signal: zebrafish. Other species not tested yet.
Specificity	Specific for GFAP isoform 1 (alpha) K.O.
Matching control	173-0P
Remarks	**WB**: The monoclonal antibodies are less sensitive compared to the rabbit polyclonal polyclonal (cat. no. 173 002). **CLARITY**: This antibody has been successfully used for CLARITY application in human brain (Woelfle et al. 2022. bioRxiv) **ELISA**: Suitable as capture antibody for sandwich-ELISA with cat. no. 173 002 or 173 211BT as detector antibody.

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

Access the online factsheet including applicable protocols at https://sysy.com/product/173011 or scan the QR-code.

Background

Glial **f**ibrillary **a**cidic **p**rotein **GFAP** is a glial-specific member of the intermediate filament protein family. This group comprises celltype-specific filamentous proteins with similar structure and function as scaffold for cytoskeleton assembly and maintenance.
Frequently, neural stem cells also express GFAP. In addition many types of brain tumors, probably derived from astrocytic cells, heavily express GFAP. This protein is also found in the lens epithelium, Kupffer cells of the liver, in some cells in salivary tumors and others.
Point-mutations in the GFAP gene have been correlated to Alexander disease a fatal leukoencephalopathy that leads to the dysmyelination or demyelination of the central nervous system.

Selected References for 173 011

IL-1β Induced Cytokine Expression by Spinal Astrocytes Can Play a Role in the Maintenance of Chronic Inflammatory Pain.
Gajtkó A, Bakk E, Hegedűs K, Ducza L, Holló K
Frontiers in physiology (2020) 11: 543331. . **WB, ICC; tested species: mouse**

Pharmacological perturbation of CXCL1 signaling alleviates neuropathogenesis in a model of HEVA71 infection.
Gunaseelan S, Ariffin MZ, Khanna S, Ooi MH, Perera D, Chu JJH, Chua JJE
Nature communications (2022) 131: 890. . **ICC, IHC; tested species: mouse,rat**

Homeostatic calcium fluxes, ER calcium release, SOCE, and calcium oscillations in cultured astrocytes are interlinked by a small calcium toolkit.
Schulte A, Bieniussa L, Gupta R, Samtleben S, Bischler T, Doering K, Sodmann P, Rittner H, Blum R
Cell calcium (2022) 101: 102515. . **WB, ICC; tested species: mouse**

Multiplex imaging of human induced pluripotent stem cell-derived neurons with CO-Detection by indEXing (CODEX) technology.
Heinrich L, Zafar F, Morato Torres CA, Singh J, Khan A, Chen MY, Hempel C, Nikulina N, Mulholland J, Braubach O, Schüle B, et al.
Journal of neuroscience methods (2022) : 109653. . **CODEX_PC; tested species: human**

Phosphorylation of the amyloid β-peptide at Ser26 stabilizes oligomeric assembly and increases neurotoxicity.
Kumar S, Wirths O, Stüber K, Wunderlich P, Koch P, Theil S, Rezaei-Ghaleh N, Zweckstetter M, Bayer TA, Brüstle O, Thal DR, et al.
Acta neuropathologica (2016) 1314: 525-37. . **IHC-P**

A DNA-based nano-immunoassay for the label-free detection of glial fibrillary acidic protein in multicell lysates.
Ganau M, Bosco A, Palma A, Corvaglia S, Parisse P, Fruk L, Beltrami AP, Cesselli D, Casalis L, Scoles G
Nanomedicine : nanotechnology, biology, and medicine (2015) 112: 293-300. . **ELISA**

Pyroglutamate amyloid β (Aβ) aggravates behavioral deficits in transgenic amyloid mouse model for Alzheimer disease.
Wittnam JL, Portelius E, Zetterberg H, Gustavsson MK, Schilling S, Koch B, Demuth HU, Blennow K, Wirths O, Bayer TA
The Journal of biological chemistry (2012) 28711: 8154-62. . **IP**

Glial Bmal1 role in mammalian retina daily changes.
Riccitelli S, Boi F, Lonardoni D, Giantomasi L, Barca-Mayo O, De Pietri Tonelli D, Bisti S, Di Marco S, Berdondini L
Scientific reports (2022) 121: 21561. . **IHC; tested species: mouse**

A multimodal 3D neuro-microphysiological system with neurite-trapping microelectrodes.
Molina-Martínez B, Jentsch LV, Ersoy F, van der Moolen M, Donato S, Ness TV, Heutink P, Jones PD, Cesare P
Biofabrication (2022) 142: . . **ICC; tested species: mouse**

Astrocyte GluN2C NMDA receptors control basal synaptic strengths of hippocampal CA1 pyramidal neurons in the stratum radiatum.
Chipman PH, Fung CCA, Pazo Fernandez A, Sawant A, Tedoldi A, Kawai A, Ghimire Gautam S, Kurosawa M, Abe M, Sakimura K, Fukai T, et al.
eLife (2021) 10: . . **IHC; tested species: mouse**

Interferon-driven brain phenotype in a mouse model of RNaseT2 deficient leukoencephalopathy.
Kettwig M, Ternka K, Wendland K, Krüger DM, Zampar S, Schob C, Franz J, Aich A, Winkler A, Sakib MS, Kaurani L, et al.
Nature communications (2021) 121: 6530. . **IHC; tested species: mouse**

Synaptic disruption and CREB-regulated transcription are restored by K+ channel blockers in ALS.
Catanese A, Rajkumar S, Sommer D, Freisem D, Wirth A, Aly A, Massa-López D, Olivieri A, Torelli F, Ioannidis V, Lipecka J, et al.
EMBO molecular medicine (2021) 137: e13131. . **ICC; tested species: human**

Synaptic control of DNA methylation involves activity-dependent degradation of DNMT3A1 in the nucleus.
Bayraktar G, Yuanxiang P, Confettura AD, Gomes GM, Raza SA, Stork O, Tajima S, Suetake I, Karpova A, Yildirim F, Kreutz MR, et al.
Neuropsychopharmacology : official publication of the American College of Neuropsychopharmacology (2020) 4512: 2120-2130. . **ICC; tested species: rat**

FAQ - How should I store my antibody?

Shipping Conditions

- All our antibodies and control proteins / peptides are shipped lyophilized (vacuum freeze-dried) and are stable in this form 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. **They must not be stored in the freezer when still lyophilized!** Temperatures below zero may cause loss of performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long term storage (several months) may lead to aggregation.
- **Control peptides** should be kept at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- The storage freezer must not be of the frost-free variety ("no-frost freezer"). This cycle between freezing and thawing (to reduce frost-build-up), which is exactly what should be avoided. For the same reason, antibody vials should be placed in an area of the freezer that has minimal temperature fluctuations, for instance towards the back rather than on a door shelf.
- Aliquot the antibody and store frozen (-20°C to -80°C). Avoid very small aliquots (below 20 µl) and use the smallest storage vial or tube possible. The smaller the aliquot, the more the stock concentration is affected by evaporation and adsorption of the antibody to the surface of the storage vial or tube. Adsorption of the antibody to the surface leads to a substantial loss of activity.
- The addition of glycerol to a final concentration of 50% lowers the freezing point of your stock and keeps your antibody at -20°C in liquid state. This efficiently avoids freeze and thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C.

Monoclonal Antibodies

- **Ascites** and **hybridoma supernatant** should be stored at -20°C up to -80°C. **Prolonged storage at 4°C is not recommended!** Unlike serum, ascites may contain proteases that will degrade the antibodies.
- **Purified IgG** should be stored at -20°C up to -80°C. Adding a carrier protein like BSA will increase long term stability. Many of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Polyclonal Antibodies

- **Crude antisera**: With anti-microbials added, they may be stored at 4°C. However, frozen storage (-20°C up to -80°C) is preferable.
- **Affinity purified antibodies**: Less robust than antisera. Storage at -20°C up to -80°C is recommended. Adding a carrier protein like BSA will increase long term stability. Most of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Fluorescence-labeled Antibodies

- Store as a liquid with 1 : 1 (v/v) glycerol at -20°C. Protect these antibodies from light exposure.

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All our antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the amount of deionized water given in the respective datasheet. If higher volumes are preferred, add water as mentioned above and then the desired amount of PBS and a stabilizing carrier protein (e.g. BSA) to a final concentration of 2%. Some of our antibodies already contain albumin. Take this into account when adding more carrier protein.
  For complete reconstitution, carefully remove the lid. After adding water, briefly vortex the solution. You can spin down the liquid by placing the vial into a 50 ml centrifugation tube filled with paper.
- If desired, add small amounts of azide or thimerosal to prevent microbial growth. This is especially recommended if you want to keep an aliquot a 4°C.
- After reconstitution of fluorescence-labeled antibodies, add 1 : 1 (v/v) glycerol to a final concentration of 50%. This lowers the freezing point of your stock and keeps your antibody in liquid state at -20°C.
- Glycerol may also be added to unlabeled primary antibodies. It is a suitable way to avoid freeze-thaw cycles.
- Please refer to our **tips and hints for subsequent storage** of reconstituted antibodies and control peptides and proteins.