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Purified anti-GFAP (Cocktail)

Catalog# / Size	837603 / 25 µg 837604 / 100 µg
Clone	SMI 26
Regulatory Status	RUO
Other Names	Glial fibrillary acidic protein
Isotype	Mouse IgG1/Mouse IgG2b

Description

Glial fibrillary acidic protein (GFAP) is an intermediate filament (IF) protein that is expressed by numerous cell types of the central nervous system (CNS) including astrocytes and ependymal cells. GFAP has also been found to be expressed in glomeruli and peritubular fibroblasts, Leydig cells of the testis, keratinocytes, osteocytes and chondrocytes and stellate cells of the pancreas and liver. GFAP is a type III IF protein that is closely related to its non-epithelial family members, vimentin, desmin, and peripherin, which are all involved in the structure and function of the cell's cytoskeleton. GFAP is thought to help to maintain astrocyte mechanical strength, as well as the shape of cells.

Type III intermediate filaments are highly conserved and contain three domains, named the head, rod and tail domains. This rod domain coils around that of another filament to form a dimer, with the N-terminal and C-terminal of each filament aligned. Type III filaments such as GFAP are capable of forming both homodimers and heterodimers; GFAP can polymerize with other type III proteins or with neurofilament light chain protein (NF-L). Interestingly, GFAP and other type III IF proteins cannot assemble with keratins, the type I and II intermediate filaments: in cells that express both proteins, two separate intermediate filament networks form.

To form networks, the initial GFAP dimers combine to make staggered tetramers, which are the basic subunits of an intermediate filament. The non-helical head and tail domains are necessary for filament formation. The head and tail regions have greater variability of sequence and structure. In spite of this increased variability, the head of GFAP contains two conserved arginines and an aromatic residue that are required for proper assembly.

Product Details

Verified Reactivity	Human, Mouse, Rat
Antibody Type	Monoclonal
Host Species	Mouse
Formulation	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide.
Preparation	The antibody was purified by affinity chromatography.
Concentration	0.5 mg/ml
Storage & Handling	The antibody solution should be stored undiluted between 2°C and 8°C.
Application	IHC-P - *Quality tested* ICC, WB - *Verified*
Recommended Usage	Each lot of this antibody is quality control tested by formalin-fixed paraffin-embedded immunohistochemical staining. For immunohistochemistry, a concentration range of 1.0 - 10.0 µg/ml is suggested. For immunocytochemistry, a concentration range of 1.0 - 10.0 µg/ml is recommended. For Western blotting, the suggested use of this reagent is 0.1 - 5.0 µg per ml. It is recommended that the reagent be titrated for optimal performance for each application.
Application Notes	Antibody is less reactive in mouse tissue in IHC-P. Multiple protein fragments ranging from 38 to 48 kD have been reported in human CNS lysates resulting from caspase- and calpain-mediated cleavage of GFAP.
RRID	AB_2728558 (BioLegend Cat. No. 837603) AB_2728559 (BioLegend Cat. No. 837604)

Antigen Details

Structure	GFAP is a 432 amino acid protein with a molecular mass of ~50 kD.
Distribution	Tissue distribution: GFAP is expressed by numerous cell types of the central nervous system (CNS) including astrocytes, ependymal cells, and Bergmann glia cells (protoplasmic astrocyte). GFAP is expressed in cells lacking fibronectin. Cellular distribution: Cytoskeleton and cytosol
Function	GFAP is a class-III intermediate filament and a structural constituent of the cytoskeleton. It is a cell-specific marker that is used to distinguish astrocytes from other glial cells during the development of the CNS.
Cell Type	Astrocytes
Biology Area	Cell Biology, Neuroscience, Neuroscience Cell Markers
Molecular Family	Intermediate Filaments
Antigen References	1. Khakh BS, Sofroniew MV. 2015. *Nat Neurosci*. 18(7):942-952.
Gene ID	2670

Related Protocols

Immunocytochemistry Staining Protocol

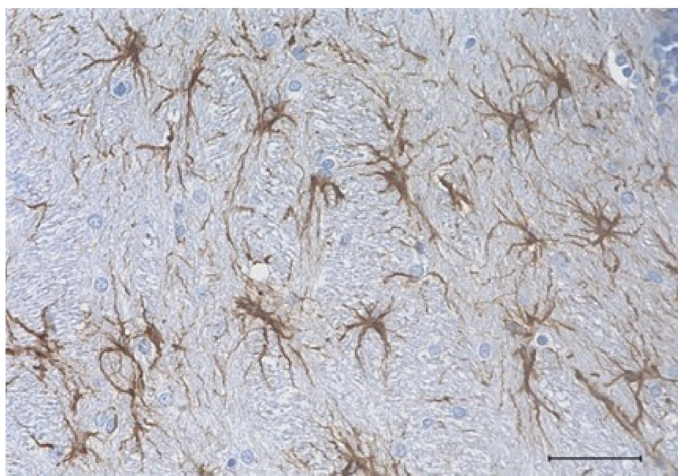
Western Blotting Protocol

Immunohistochemistry Protocol for Paraffin-Embedded Sections

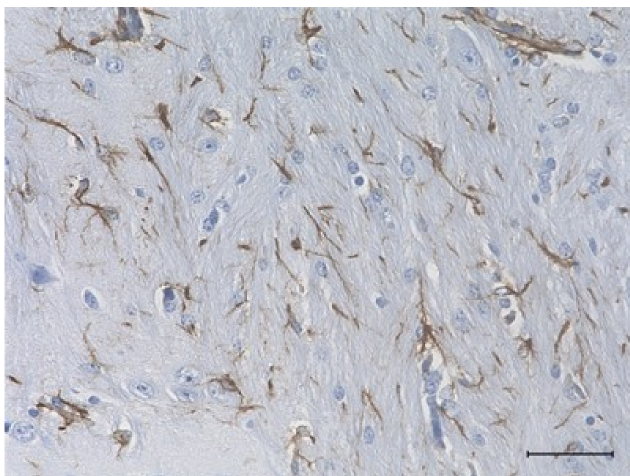
Other Formats

Anti-GFAP (Cocktail), Purified anti-GFAP (Cocktail)

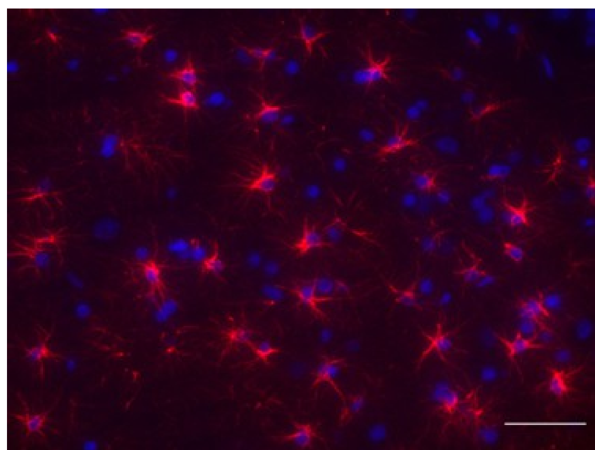
Product Data



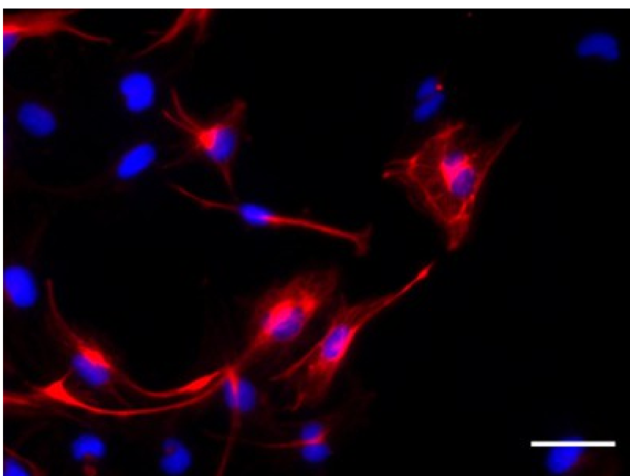
IHC staining of purified anti-GFAP (Cocktail) antibody (clone SMI 26) on formalin-fixed paraffin-embedded rat brain tissue. Following antigen retrieval using Retrieve-All Antigen Unmasking System 3: Acidic, 1X (Cat. No. 927701), the tissue was incubated with 1 µg/ml of the primary antibody for 60 minute at room temperature. BioLegend´s Ultra-Streptavidin (USA) HRP kit (Multi-Species, DAB, Cat. No. 929901) was used for detection followed by hematoxylin counterstaining, according to the protocol provided. The image was captured with a 40X objective. Scale bar: 50 µm



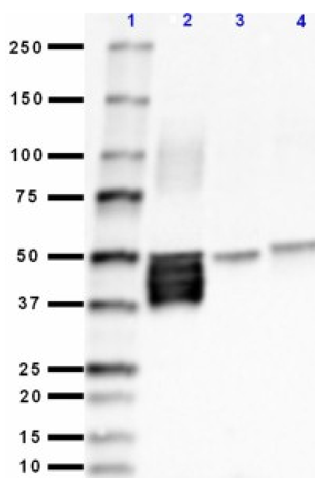
IHC staining of purified anti-GFAP (Cocktail) antibody (clone SMI 26) on formalin-fixed paraffin-embedded mouse brain tissue. Following antigen retrieval using Retrieve-All Antigen Unmasking System 3: Acidic, 1X (Cat. No. 927701), the tissue was incubated with 10 µg/ml of the primary antibody for 60 minute at room temperature. BioLegend´s Ultra-Streptavidin (USA) HRP kit (Multi-Species, DAB, Cat. No. 929901) was used for detection followed by hematoxylin counterstaining, according to the protocol provided. The image was captured with a 40X objective. Scale bar: 50 µm



IHC staining of purified anti-GFAP (Cocktail) antibody (clone SMI 26) on formalin-fixed paraffin-embedded rat brain tissue. Following antigen retrieval using Retrieve-All Antigen Unmasking System 3: Acidic, 1X (Cat. No. 927701), the tissue was incubated with 10 µg/mL of the primary antibody overnight for 60 minutes at room temperature, followed by incubation with Alexa Fluor® 594 anti-mouse IgG for one hour at room temperature. Nuclei were counterstained with DAPI. The image was captured with 40 X objective. Scale bar: 50 µm



ICC staining of purified anti-GFAP (Cocktail) antibody (clone SMI 26) on U251 cells. The cells were fixed with ice cold methanol, permeabilized with a buffer containing 0.1% Triton X-100 and 0.1% BSA, and blocked with 2% normal goat serum and 0.02% BSA. The cells were then incubated with 1 µg/ml of the primary antibody overnight at 4°C, followed by incubation with 2.5 µg/ml of Alexa Fluor® 594 goat anti-mouse IgG for one hour at room temperature. Nuclei were counterstained with DAPI. The image was captured with a 40X objective. Scale bar: 50 µm



Western blot of purified anti-GFAP (Cocktail) antibody (clone SMI 26). Lane 1: Molecular weight marker; Lane 2: 20 µg of human brain membrane lysate; Lane 3: 20 µg of mouse brain membrane lysate; Lane 4: 20 µg of rat brain membrane lysate. The blot was incubated with 5 µg/mL of the primary antibody overnight at 4°C, followed by incubation with HRP labeled goat anti-mouse IgG (Cat. No. 405306). Enhanced chemiluminescence was used as the detection system.

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