Chicken pAb to GFAP CPCA-GFAP

Ordering Information
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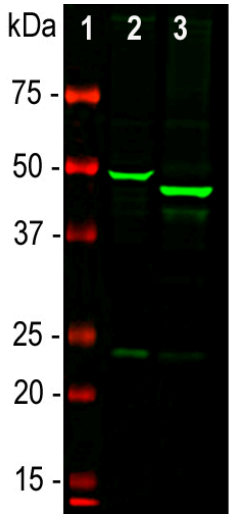
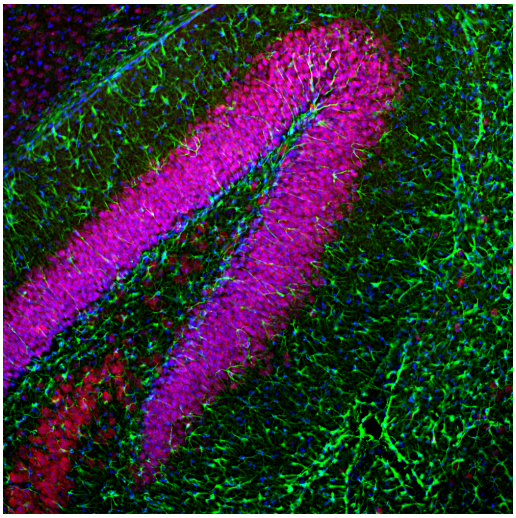
HGNC name: GFAP
RRID: AB_2109953
Immunogen: Recombinant full length human GFAP isotype 1 expressed in and purified from *E. coli.*
Format: Concentrated IgY prep in PBS with 0.02% NaN3
Storage: Shipped on ice. Stable at 4°C for at least one year. Mix 1:1 with 100% glycerol and put at -20°C for longer term storage
Recommended dilutions:
Western blot: 1:5,000.
IF/ICC and IHC: 1:1,000-1:5,000.

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
Western blot, ICC/IF, IHC	**Chicken**	**IgY**	**~50 kDa**	**Hu, Rt, Ms, Bo, Po, Ho, Ck**



Western blot analysis of whole brain lysates using chicken pAb to GFAP, CPCA-GFAP, dilution 1:5,000 in green: [1] protein standard (red), [2] rat brain, [3] mouse brain. The strong band at about 50 kDa corresponds to the GFAP protein. Smaller proteolytic fragments and alternate transcripts of GFAP may also be detected on such blots.



Immunofluorescent analysis of a section of mouse hippocampus stained with chicken pAb to GFAP, CPCA-GFAP, dilution 1:5,000 in green and costained with rabbit pAb to FOX3/NeuN, RPCA-FOX3, dilution 1:5,000, in red. The blue is DAPI staining of nuclear DNA. Following transcardial perfusion with 4% paraformaldehyde, mouse brain was post fixed for 24 hours, cut to 45 µM, and free-floating sections were stained with the above antibodies. The GFAP antibody stains a network of astroglial cells while the Fox3/NeuN antibody stains the nuclei and proximal perikarya of neurons.

Background: Glial Fibrillary Acidic Protein (GFAP) was discovered by Amico Bignami and coworkers as a major fibrous protein of multiple sclerosis plaques (1). It was subsequently found to be a member of the 10nm or intermediate filament protein family, specifically the intermediate filament protein family Class III, which also includes peripherin, desmin and vimentin. The GFAP protein runs on gels as a ~55kDa protein, usually associated with somewhat lower molecule weight bands which are alternate transcripts from the single gene. GFAP is strongly and specifically expressed in astrocytes and certain other glia in the central nervous system, in satellite cells in peripheral ganglia, and in non-myelinating Schwann cells in peripheral nerves (2,3). It is also a component of neural stem cells.

Astrocytes respond to many damage and disease states resulting in “astrogliosis” or the presence of a “glial response”. GFAP antibodies are widely used to see the reactive astrocytes which form part of this response, since reactive astrocytes stain much more strongly with GFAP antibodies than normal astrocytes. GFAP also forms a major component of the so-called glial scar, an astrocyte rich structure apparently forming part of the barrier to nerve fiber regeneration following damage in the central nervous system (4).

Neural stem cells frequently strongly express GFAP. Antibodies to GFAP are therefore very useful as markers of normal and reactive astrocytic cells and neural stem cells. Finally, Alexander disease was recently shown to be caused by point mutations in the protein coding region of the GFAP gene (5). All forms of Alexander disease are characterized by the presence of Rosenthal fibers, which are GFAP containing cytoplasmic inclusions found in astrocytes.

References:

1. Bignami A, Eng LF, Dahl D, Uyeda CT. Localization of the glial fibrillary acidic protein in astrocytes by immunofluorescence. Brain Res. 43:429-35 1972.
2. Yen SH, Fields KL. Antibodies to neurofilament, glial filament, and fibroblast intermediate filament proteins bind to different cell types of the nervous system. J Cell Biol. 88:115-26 1981.
3. Shaw G, Osborn M, Weber K. An immunofluorescence microscopical study of the neurofilament triplet proteins, vimentin and glial fibrillary acidic protein within the adult rat brain. Eur J Cell Biol. 26:68-82 1981.
4. Fitch MT, Silver J. CNS injury, glial scars, and inflammation: Inhibitory extracellular matrices and regeneration failure. Exp Neurol. 209:294-301 2008.
5. Brenner M, Johnson AB, Boespflug-Tanguy O, Rodriguez D, Goldman JE, Messing A. Mutations in GFAP, encoding glial fibrillary acidic protein, are associated with Alexander disease. Nat Genet 27:117-20 2001.

Abbreviation Key:
mAb—Monoclonal Antibody **pAb**—Polyclonal Antibody **WB**—Western Blot **IF**—Immunofluorescence **ICC**—Immunocytochemistry **IHC**—Immunohistochemistry **E**—ELISA **Hu**—Human **Mo**—Monkey **Do**—Dog **Rt**—Rat **Ms**—Mouse **Bo**—Cow **Po**—Pig **Ho**—Horse **Ch**—Chicken **Dr**—*D. rerio* **Dm**—*D. melanogaster* **Ce**—*C. elegans* **Sc**—*S. cerevisiae* **Sa**—*S. aureus* **Ec**—*E. coli.*

Our antibody produces strong and specific staining on western blots, in immunocytochemistry (see below) and on formalin fixed paraffin embedded sections (see here).