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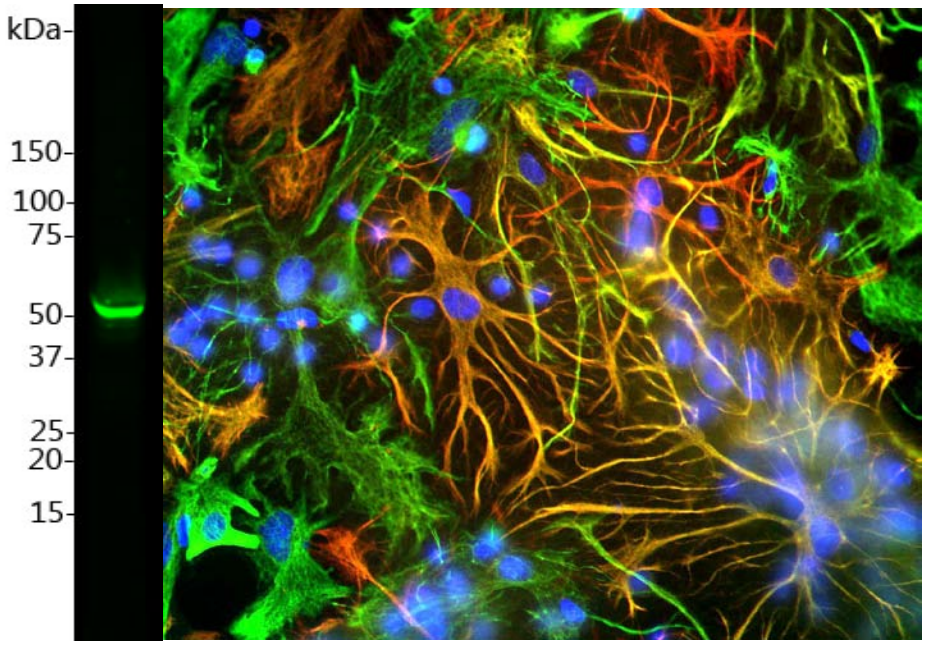
Catalogue# RPCA-GFAP: Rabbit Polyclonal Antibody to Glial Fibrillary Acidic Protein (GFAP)

Immunogen: 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 at ~55 kDa protein, usually associated with lower molecule weight bands which are thought to be proteolytic fragments and alternate transcripts from the single gene. GFAP is strongly and specifically expressed in astrocytes and certain other astroglia in the central nervous system, in satellite cells in peripheral ganglia, and in non-myelinating Schwann cells in peripheral nerves. In many damage and disease states, GFAP expression is heavily upregulated in astrocytes. In addition neural stem cells frequently strongly express GFAP. Antibodies to GFAP are therefore very useful as markers of astrocytic cells and neural stem cells. In addition many types of brain tumor, presumably derived from astrocytic cells, heavily express GFAP. Finally, Alexander's disease was recently shown to be caused by point mutations in protein coding region of the GFAP gene (2). All forms of Alexander disease are characterized by the presence of Rosenthal fibers, which are GFAP containing cytoplasmic inclusions found in astrocytes. The HGNC name for this protein is GFAP.

Antibody Characteristics: The initial challenge was performed with a preparation of recombinant GFAP expressed in bacteria and highly purified. Subsequent boosts were performed with GFAP purified from a Triton X-100 extract of myelin associated material from bovine spinal cord, following an axonal flotation procedure (3). The GFAP was further purified by centrifugation and ion exchange chromatography in 6M urea on DEAE cellulose. This antibody is provided as crude serum. Store at 4°C or -20°C. Avoid repeat freezing and thawing.



Left: Western blot analysis of RPCA-GFAP. Blot of rat brain lysate was probed with RPCA-GFAP, at dilution of 1:5,000. A prominent band running with an apparent SDS-PAGE molecular weight of ~50 kDa corresponds to rodent GFAP. **Right:** Mixed neuron-glial cultures stained with rabbit GFAP (red channel) and chicken vimentin CPCA-Vim (green channel). The fibroblastic cells contain only vimentin and so are green, while astrocytes contain either vimentin and GFAP, so appearing golden, or predominantly GFAP, in which case they appear red. Blue is nuclear DNA stain.

Suggestions for use: For immunocytochemistry on cells in tissue culture or in tissue sections, try this antibody at 1:1,000 using fluorescent secondary antibodies or 1:5,000 using peroxidase or other enzyme linked methods. For immunoblotting 1:10,000 is recommended. Expect to see a band at 55 kDa and another at about 48 kDa, apparently a breakdown product of the 55 kDa band.

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. Brenner M, Johnson AB, Boespflug-Tanguy O, Rodriguez D, Goldman JE and Messing A. Mutations in GFAP, encoding glial fibrillary acidic protein, are associated with Alexander disease. Nat Genet 27:117-20 2001

3. Liem RKH, Yen SH, Salomon GD and Shelanski ML. Intermediate filaments in nervous tissues. J Cell Biol 79:637-745 (1978).

Limitations: This product is for research use only and is not approved for use in humans or in clinical diagnosis.