**Neurofilament NF-H Mouse Monoclonal Antibody**

**Applications:** WB, IF/ICC, IHC  
**Host:** Mouse  
**Isotype:** IgG1  
**Molecular Wt.:** 200-220kDa  
**Species Cross-Reactivity:** Hu, Rt, Ms, Co, Pi, Ho

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<th>kDa</th>
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<td>250 &gt;</td>
<td>150 &gt;</td>
<td>100 &gt;</td>
<td>75 &gt;</td>
<td>50 &gt;</td>
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- Immunohistological analysis of rat cerebellum section stained with mouse mAb to pNF-H, MCA-AH1, dilution 1:2,000 in green, and co-stained with rabbit pAb to FOX3/NeuN, RPCA-FOX3, dilution 1:5,000 in red. Following transcardial perfusion with 4% paraformaldehyde, brain was post fixed for 24 hours, cut to 45μM, and free-floating sections were stained with above antibodies. The MCA-AH1 antibody stains axons in the granular layer and white matter and prominent basket cell axons surrounding the large Purkinje neurons. The FOX3/NeuN antibody specifically labels nuclei of granular and other neurons, but does not stain Purkinje cells.

**Background:**
- **Neurofilaments** are the 10nm or intermediate filament proteins found specifically in neurons, and are composed predominantly of three major proteins called NF-L, NF-M and NF-H, though other proteins may also be present. NF-H is the neurofilament high or heavy molecular weight polypeptide and runs on SDS-PAGE gels at 200-220 kDa, with some variability across species boundaries. The protein is in reality much smaller in molecular size, about 110kDa (1,2). The unusual SDS-PAGE mobility is due partly to a very high content of charged amino acids, particularly glutamic acid rich regions, and the non-phosphorylated form runs on SDS-PAGE at about 160kDa. The predominant type of NF-H is the axonal form which is heavily serine phosphorylated on 40 or more tandemly repeated lysine-serine-proline (KSP) containing peptides (3-5). The phosphorylation of these peptides results in considerable further retardation on SDS-PAGE gels, so the heavily phosphorylated axonal form runs at 200-220kDa with some species variability. Antibodies to NF-H are useful for identifying axonal processes in tissue sections and in culture. NF-H antibodies can also be useful in visualizing neurofilament accumulations seen in many neurological disorders, such as Amyotrophic Lateral Sclerosis (also known as Lou Gehrig’s disease), Alzheimer’s disease and following traumatic injury. The phosphorylated axonal form of NF-H, usually referred to as pNF-H, can be detected in blood and CSF following a variety of damage and disease states resulting in axonal compromise, and antibodies such as this can be used to used to quantify such ongoing axonal loss (e.g. 6-8).
- MCA-AH1 is a mouse monoclonal antibody raised against native axonal phosphorylated NF-H purified from bovine spinal cord (9). MCA-AH1 recognizes phosphorylated NF-H KSP sequences but not non-phosphorylated KSP sequences, similar to other antibodies to NF-H (5,7). In some species there is some cross-reactivity with the phosphorylated KSP sequences found in the related neurofilament subunit NF-M. The antibody recognizes NF-H strongly in all mammals tested to date and also in chicken. It recognizes neurofilaments in frozen sections in tissue culture and in formalin fixed sections. We also market alternate mouse monoclonal antibodies to NF-H MCA-NAP4 and MCA-9812 and also rabbit and chicken polyclonal antibodies RPCA-NF-H and CPCA-NF-H, all of which have similar specificities to MCA-AH1. However MCA-AH1 was developed specifically for screening by a reagent which works well as in ELISA (7).

**References:**

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**Abbreviation Key:**