Neurofilament NF-L
Mouse Monoclonal Antibody

MCA-6H112

HGNC Name: NEFL
UniProt: P07196
RRID: AB_2813766
Immunogen: C-terminal peptide of human NF-L protein, GEEEDTKESEEEEKKEESAGEEQVAKKKD with an N-terminal C for coupling to KLH
Format: Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN₃
Storage: Store at 4°C for short term, for longer term at -20°C.
Recommended dilutions:
WB: 1:5,000 IF/ICC 1:1,000 IHC 1:4,000

**References:**

1. Hoffman et al. Neurofilament gene expression:a major determinant of axonal caliber. PNAS 84:3472-6 (1987).
2. Perrot R, et al. Review of the Multiple Aspects of Neurofilament Functions, and their Possible Contribution to Neurodegeneration. Mol. Neurobiol. 38:27-65 (2008).
3. Lépinoux-Chambaud C. Eyer J. Review on intermediate filaments of the nervous system and their pathological alterations. Histochem. Cell Biol. 140:13-22 (2013).
4. Liu Q. et al. Neurofilamentopathy in Neurodegenerative Diseases. Open Neurol. J. 5:58–62 (2011).
5. Bacioglu M, et al. Neurofilament light chain in blood and CSF as marker of disease progression in mouse models and in neurodegenerative diseases. Neuron 91:56-66 (2016).

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgG1	68kDa by SDS-PAGE	Hu, Rt, Ms, Co, Pi,
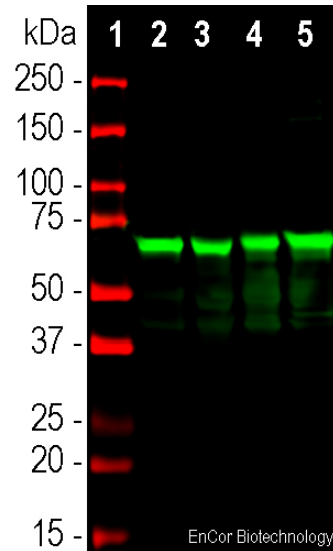
Western blot analysis of spinal cord lysates from different species using mouse monoclonal antibody to NF-L, MCA-6H112, dilution 1:5,000 in green: [1] protein standard (red), [2] rat, [3] mouse, [4] pig, and [5] cow spinal cord. Strong band at about 70kDa corresponds to the NF-L protein.
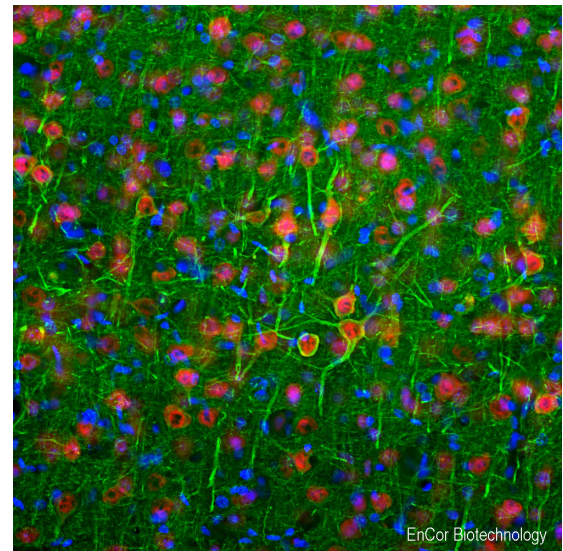
Immunofluorescent analysis of a rat frontal cortex section stained with mouse mouse mAb to NF-L, MCA-6H112, dilution 1:2,000 in green, and costained with rabbit pAb to FOX3/NeuN, RPCA-FOX3, dilution 1:2,000 in red. Following transcardial perfusion of rat with 4% paraformaldehyde, brain was post fixed for 24 hours, cut to 45µM, and free-floating sections were stained with the above antibodies. The MCA-6H112 antibody labels the cell bodies and processes of pyramidal neurons, as well as dendrites and axons of other neuronal cells, while the FOX3/NeuN antibody selectively stains nuclei and cytoplasm of neuronal 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 filament proteins may be included also. The major function of neurofilaments is likely to control the diameter of large axons (1). NF-L is the neurofilament light or low molecular weight polypeptide and runs on SDS-PAGE gels at 68-70kDa with some variability across species. Antibodies to NF-L like MCA-6H112 are useful for identifying neuronal cells and their processes in cell culture and sectioned material. NF-L antibody can also be useful for the visualization of neurofilament rich accumulations seen in many neurological diseases, such as Lou Gehrig's disease (ALS), giant axon neuropathy, Charcot-Marie Tooth disease and others (2-4). Much interest has recently been focused on the detection of NF-L released from neurons into blood and CSF as a surrogate marker of primarily axonal loss in a variety of types of CNS injury and degeneration (5).

MCA-6H112 was made against the peptide GEEEDTKESEEEEKKEESAGEEQVAKKKD with an N-terminal cysteine added by which it was coupled to keyhole limpet hemocyanin. This is the C-terminal peptide of human NF-L, amino acids 514-542. The properties of this antibody make is useful for western blotting, cell and tissue staining and monitoring NF-L proteolysis. The antibody works well for western blotting and for IF, ICC and IHC (for IHC see data under "Additional Info" tab). We also market several other NF-L antibodies including a rabbit and chicken polyclonal antibodies, RPCA-NF-L and a CPCA-NF-L, both made against full length recombinant human NF-L. We also have several epitope mapped mouse monoclonals including the widely used and epitope mapped MCA-DA2, see here.

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 Co—Cow Pi—Pig Ho—Horse Ch—Chicken
Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.