Neurofilament NF-L Mouse Monoclonal Antibody

MCA-DA2

Ordering Information
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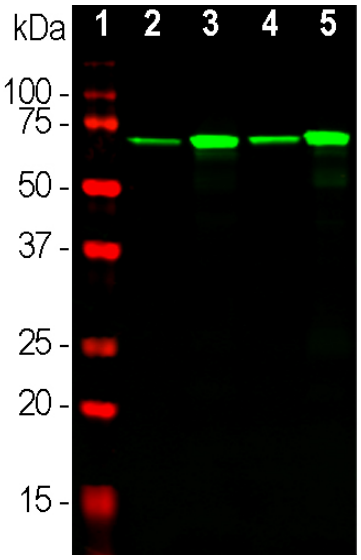
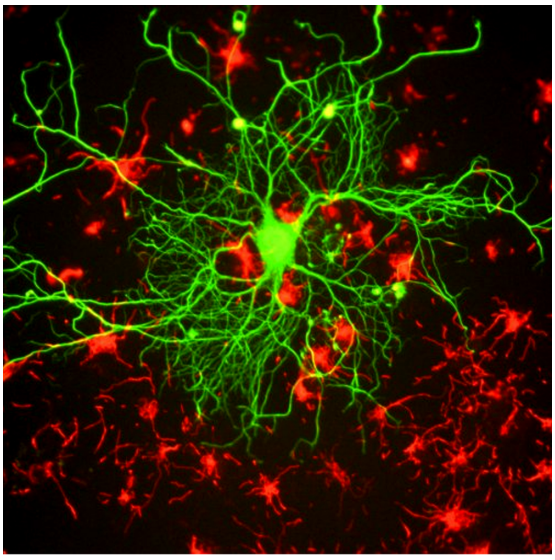
HGNC Name: *NEFL*
UniProt: *P07196*
RRID: *AB_2572362*
Immunogen: *Enzymatically dephosphorylated full length pig NF-L protein*
Format: *Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN_3*
Storage: *Store at 4°C for short term, for longer term at -20°C.*
Recommended dilutions:
WB: 1:5,000. IF/ICC: 1:1,000. IHC: 1:2,000.

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgG1 heavy, κ light	68-70kDa by SDS-PAGE	Hu, Rt, Ms, Co, Pi, Ho



Western blot analysis of whole tissue lysates using mouse mAb to NF-L, MCA-DA2, dilution 1:5,000 in green: [1] protein standard (red), [2] rat brain, [3] rat spinal cord, [4] mouse brain, [5] mouse spinal cord. The strong band at 68-70kDa corresponds to the NF-L protein.



A well known and widely utilized image of a neuron in cell culture stained with the MCA-DA2 antibody at a dilution of 1:1,000 in green, see here. The culture was derived from adult rat cortex grown under conditions to induce neuronal survival and differentiation, see reference 6 for details. The culture was counterstained with EnCor rabbit polyclonal antibody to α-internexin in red, RPCA-a-Int. The α-internexin antibody highlights a network of small neurons at an early stages of differentiation.

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-DA2 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-DA2 antibody was made against a preparation of NF-L isolated from pig spinal cord. The antibody works well for western blotting and for IF, ICC and IHC on a variety of species including human, rat and mouse (for IHC see data under "Additional Info" tab). We recently epitope mapped this antibody to a short peptide in the C-terminal "tail" region of the molecule within the sequence SYYTSHVQEEQIEVE, amino acids 441-455 of the human sequence. We recently found that the epitope for this antibody is rapidly degraded during neurodegeneration so this antibody is related to our novel Degenotag™ reagents, see our recent paper for details (7). An alternate mouse monoclonal antibody made against recombinant full length human NF-L is MCA-1B11, which recognizes an epitope in the α-helical coiled coil region of NF-L (7). Also available from EnCor are rabbit and chicken polyclonal antibodies to NF-L made against recombinant full length human NF-L, RPCA-NF-L, and CPCA-NF-L. All four antibodies work on a variety of species and are clean and specific on western blots, cell and tissue staining.

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).
6. Evans, J, et al. Characterization of mitotic neurons derived from adult rat hypothalamus and brain stem. J. Neurophysiol. 87:1076-1085 (2002).
7. Shaw G, et al. Uman type neurofilament light antibodies are effective reagents for the imaging of neurodegeneration. Brain Communications doi.org/10.1093/braincomms/fcad067.

Peer reviewed publications which make use of this antibody as supplied by EnCor can be found through a CiteAb search by selecting this link.

The antibody has also been sold through many OEM partners, and peer-reviewed publications making use of it can be found by searching Google Scholar for "MCA-DA2 AND Antibody" or, if you are viewing this online, simply by selecting this link.

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.