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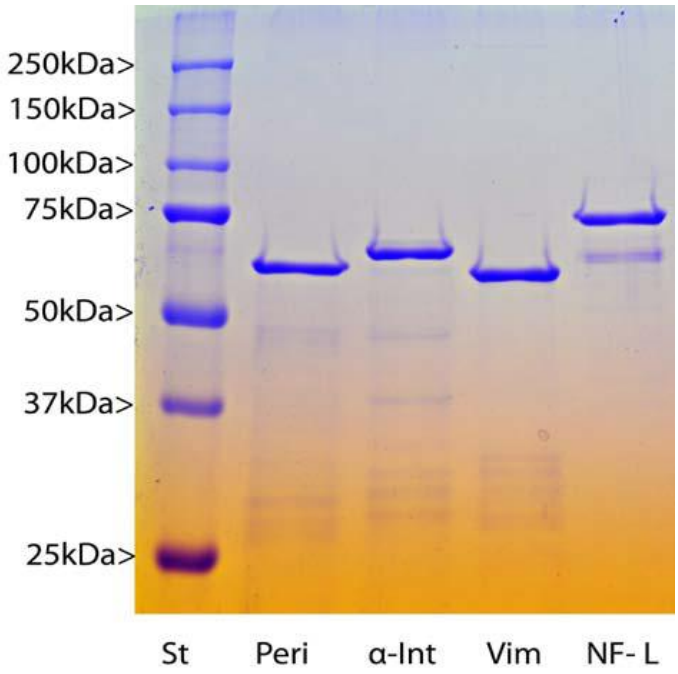
Catalogue# Prot-r-NF-L: Purified recombinant full length human neurofilament NF-L

Background: Neurofilaments are the 10 nm or intermediate filament proteins found specifically in neurons, and are composed predominantly of three major proteins called NF-L, NF-M and NF-H (1). NF-L and other neurofilament subunits accumulate in many neurological diseases, such as Lou Gehrig's disease (ALS) and Alzheimer's disease, and mutations in the protein coding region of the human NF-L gene cause some forms of Charcot-Marie-Tooth disease (2-4). There has been much recent interest in the detection of NF-L in CSF and blood as a surrogate marker of neuronal damage and degeneration (5). Our protein preparation can be used as an ELISA standard or to generate antibodies to human NF-L.



Left: Coomassie brilliant blue stained SDS-PAGE gel of various recombinant proteins. His-tagged human neurofilament NF-L, was expressed and purified from *E. coli* BL21 strain using immobilized metal affinity chromatography. 1µg of pure protein was run on each lane, and the lane indicated with "NF-L" contains the neurofilament NF-L protein. The other lanes show recombinant His-tagged peripherin (Peri), α-internexin (α-Int) and vimentin (Vim) as indicated. Protein molecular weight standards are in the first lane and apparent molecular weights are as indicated. In each case the molecules run at ~5kDa slower than the native protein due to the addition of the His-tag and other pET vector derived sequence.

Protein Characteristics: A codon optimized cDNA designed to express full length human neurofilament NF-L was inserted into pET30a (+) eukaryotic expression vector, which adds an N-terminal in frame His-tag and some other vector sequence. This was transformed into *E. coli* and recombinant protein was purified in 6M urea using immobilized metal affinity chromatography. Purified protein was diluted to 0.5mg/mL and is supplied in 6M urea.

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).

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