

## Ordering Information

Web [www.encorbio.com](http://www.encorbio.com)  
Email [admin@encorbio.com](mailto:admin@encorbio.com)  
Phone 352-372-7022  
Fax 352-372-7066

HGNC Name: NEFL

RRID: NA

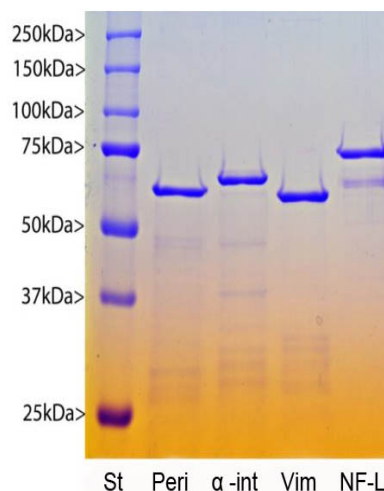
Format: 1mg/mL in 6M urea, 10mM Phosphate pH=7.5  
Storage: Stable at 4°C for several months. For longer term store at -20°C or lower

UniProt: [PO7196](http://www.uniprot.org/entry/PO7196)

## References:

- Hoffman et al. Neurofilament gene expression: a major determinant of axonal caliber. *PNAS* 84:3472-6 (1987).
- Perrot R, et al. Review of the Multiple Aspects of Neurofilament Functions, and their Possible Contribution to Neurodegeneration. *Mol. Neurobiol.* 38:27-65 (2008).
- Lépinoux-Chambaud C, Eyer J. Review on intermediate filaments of the nervous system and their pathological alterations. *Histochem. Cell Biol.* 140:13-22 (2013).
- Liu Q, et al. Neurofilamentopathy in Neurodegenerative Diseases. *Open Neurol. J.* 5:58-62 (2011).
- 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	Molecular Wt.	HGNC	UniPort
Protein standard for ELISA, MSD, Luminex and Simoa assays, immunogen for antibody production	E. coli	70kDa by SDS-PAGE plus ~5kDa His Tag	NEFL	<a href="http://www.uniprot.org/entry/PO7196">PO7196</a>



Coomassie Brilliant Blue stained SDS-PAGE gel of various recombinant proteins expressed in and purified from *E. coli*. 1µg of protein was run on each lane, and the lane indicated with "NF-L" contains the human neurofilament NF-L protein. The other lanes show recombinant human peripherin (Peri), human  $\alpha$ -internexin ( $\alpha$ -int) and human vimentin (Vim) as indicated. Protein molecular weight standards are in the first lane and apparent molecular weights of the recombinant proteins are as indicated. In each case the proteins run at about 5kDa higher than the native protein due to the presence of the His-tag and other vector derived sequence. The band below the major NF-L band represents a proteolytic fragment seen in bacterial preparations and also in vivo. The lower band stains with most NF-L antibodies but not with those directed against the extreme C-terminus (see for example [MCA-6H112](http://www.ncbi.nlm.nih.gov/pubmed/1641112)).

## Background:

Neurofilaments are the 10 nm or intermediate filament proteins found specifically in neurons, and are composed predominantly of four major proteins called NF-L, NF-M, NF-H and  $\alpha$ -internexin. NF-L, NF-M and NF-H were named based on their apparent molecular weight on SDS-PAGE gels, so NF-L is low or light, NF-M is medium or middle and NF-H is high or heavy. On SDS-PAGE NF-L runs at 68-70kDa, NF-M at 145-160kDa and NF-H at 200-220kDa with some species variability, larger species tending to have larger molecules. In every case the real molecular weight is significantly lower since long acidic sequences in these molecules cause them to run aberrantly. These three proteins are major components of large diameter axons in the adult, while  $\alpha$ -internexin is a more major component of the developing nervous system, although still present in the adult. 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). NF-L is a very abundant protein particularly concentrated in large diameter axons and may leak into blood and CSF following various kinds of axonal injury and/or degeneration. There has therefore been much recent interest in the detection of NF-L in CSF and blood as a surrogate marker of neuronal damage and degeneration (5). NF-L is also known as NF-Light, Nfl and NEFL.

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 derived sequence. This was transformed into *E. coli* and the 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. Our protein preparation is widely used as a protein standard in ELISA, Simoa and other kinds of antibody based assays for NF-L detection. NF-L is also known as Nfl and NEFL.

**FOR RESEARCH USE ONLY. NOT INTENDED FOR DIAGNOSTIC OR THERAPEUTIC USE.**

## 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*.