

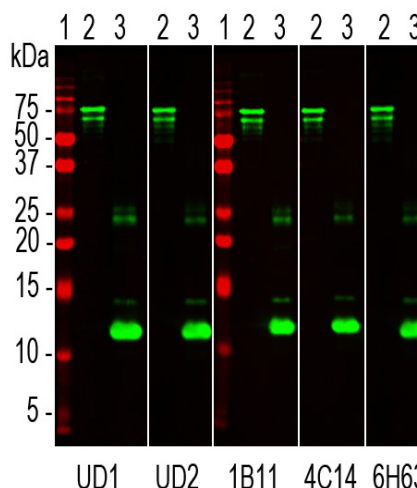
Ordering Information
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HGNC Name: NEFL
RRID: NA
Format: 0.5mg/mL in 6M Urea and phosphate buffer at pH=7.4
Storage: Store at -20°C
UniProt: P07196

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).
- Norgren N, et al. Monoclonal antibodies selective for low molecular weight neurofilaments. *Hybrid. Hybridomics* 21:53-59 (2002).
- Shaw et al. Uman Type NF-L Antibodies Are Effective Reagents for the Imaging of Neurodegeneration. *BioRxiv DOI* 10.1101/2022.08.27.504533v1 2022.

Applications	Host	Molecular Wt.	HGNC	UniPort
ELISA standard, immunogen	NA	~11kDa	NEFL	P07196



Western blots of Uman NF-LIGHT™ antibodies and a set of EnCor reagents on PROT-r-NF-L and PROT-r-NF-L-Stan. Lanes labelled 1 in red are protein standards of indicated molecular weights. Lanes labelled 2 were loaded with full length recombinant human NF-L, PROT-r-NF-L, while lanes labelled 3 were loaded with PROT-r-NF-L-Stan. The full length protein runs at about 75kDa, while PROT-r-NF-L-Stan runs at about 12kDa. All five antibodies recognize both constructs. UD1 is also known as 2.1 is the detection reagent in the Uman NF-LIGHT™ assay while UD2, also known as 47.3 is the capture reagent. The three other lanes show results obtained with EnCor antibodies MCA-1B11, MCA-4C14 and MCA-6H63 respectively as indicated.

Background:

Neurofilaments are the 10nm or intermediate filament proteins found specifically in neurons, and are composed predominantly of four major proteins called NF-L, NF-M, NF-H and α -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. These three proteins are major components of large diameter axons in the adult, while α -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 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).

A codon optimized cDNA designed to express amino acids 306-364 of human neurofilament NF-L was inserted into pET29a(+) eukaryotic expression vector, which adds a C-terminal in frame His-tag and some other vector derived sequence. We recently showed that both epitopes for the antibodies used in the Uman NF-LIGHT™ and Quanterix Simoa™ NF-L assays (6) bind to this region of NF-L, so this protein will be an excellent standard for assays of this type (7 or download our [BioRxiv preprint](#)). We included two tryptophan residues to allow accurate spectrophotometric quantification. The construct was transformed into *E. coli* and purified in 6M urea using immobilized metal affinity chromatography. Purified protein was diluted to 0.5mg/mL and is supplied in 6M urea.

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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*.