

Light the path to your next neuroscience discovery with a new ultrasensitive NF-L immunoassay

NEUROFILAMENT light chain (NF-L) is a low molecular weight member of a family of proteins involved in axonal development and function. NF-L accumulation is viewed as a telltale sign of axonal damage in the brain. While NF-L levels alone cannot serve as a diagnostic marker for any specific neurodegenerative disorder, this protein is typically assessed in conjunction with other key analytes such as tau protein, glial fibrillary acidic protein (GFAP), and α -synuclein. Today, NF-L is the focus of hundreds of basic research and clinical studies involving conditions such as Alzheimer's disease, multiple sclerosis, and traumatic brain injury, making it a key target in the development of many novel therapeutics.

While experiments to measure NF-L and other analytes have mainly analysed cerebrospinal fluid (CSF) samples, scientists have recently begun incorporating circulating samples as part of their research programmes. Not only are serum and plasma samples easier to obtain in large quantities compared to CSF, but blood-based analysis also paves the way for novel neurological disease studies, including the identification and evaluation of early disease states before clinical symptoms take hold.

Neuroscience blood-based biomarker studies have been made possible through the advent of ultrasensitive immunoassay technologies, as many key proteins are found in very low abundance in circulation relative to CSF. We are proud to aid these efforts by offering a comprehensive menu of rigorously developed kits using the ultrasensitive Single Molecule Counting (SMC[®]) technology, including the new SMC Human NF-L High Sensitivity Immunoassay Kit. By coupling these assays with the powerful state-of-the-art SMCxPRO[®] detection system, researchers can conduct cutting-edge studies with accurate biomarker measurements in serum, plasma, and CSF samples.

We have augmented the traditional sandwich ELISA format for low-abundant protein detection by incorporating specialised blocker



formulations and a unique elution step for isolating individual analyte binding events for analysis. Meanwhile, the powerful SMCxPRO system is specially designed for digital molecule counting, yielding accurate and precise data without the need for fluidics, ensuring consistent and reliable performance throughout the course of your studies.

Developing therapeutics for diseases such as Alzheimer's disease and multiple sclerosis requires the completion of stringent pre-clinical and clinical trials. We formulate SMC assays that can successfully be applied to generate the accurate and reproducible data needed to qualify biomarkers as targets for novel treatments. The comprehensive SMC assay development process, guided by our rich history of developing high-quality immunoassays, features verification criteria such as:

- spike and recovery
- dilutional linearity
- parallelism in normal and diseased samples
- intra- and inter-assay precision
- temperature and freeze/thaw stability testing.

Our new NF-L high sensitivity immunoassay joins a comprehensive SMC neuroscience kit menu that features assays for GFAP, tau, α -synuclein, and TDP-43. In addition to high-performance kits for neuroscience biomarkers, our menu also includes assays in the fields of immunology, cardiovascular disease, and metabolism, for researchers studying neuroinflammation or the interplay between neurodegeneration and heart pathologies in certain disease states. All SMC products and services are supported by our highly knowledgeable and skilled technical support and application scientist teams, dedicated to helping researchers get the most out of ultrasensitive biomarker studies. 📷

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Discover all of the ways you can harness ultrasensitive immunoassays to stay at the forefront of neuroscience research at:

SigmaAldrich.com/smc-neuro

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Biomarkers on Your Mind?

Explore with Ultrasensitive Neuro Immunoassays

Cerebrospinal fluid (CSF) biomarkers can present a challenge in neuroscience research because CSF samples are difficult to obtain. This creates a need for blood-based biomarkers. However, identifying them is limited by the sensitivity of standard immunoassays.

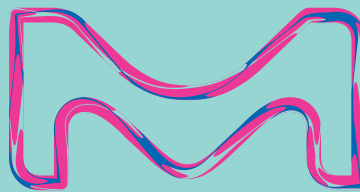
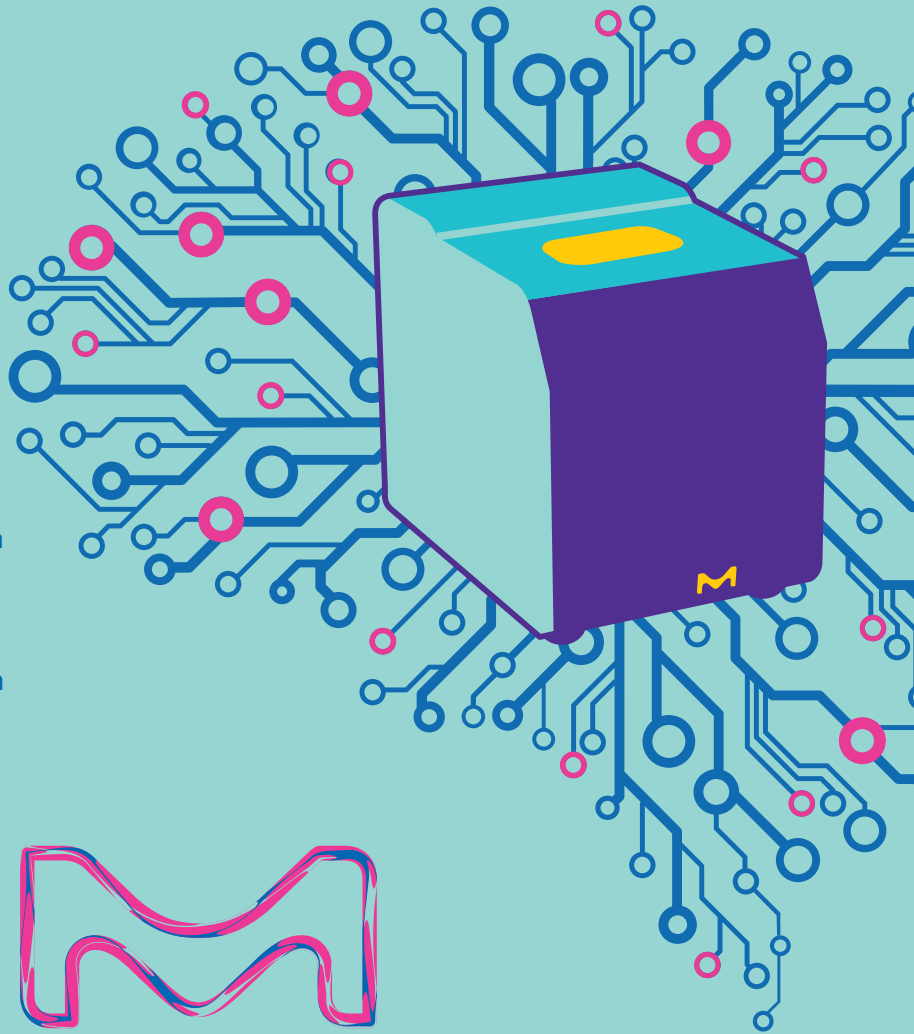
Ultrasensitive Single Molecule Counting (SMC[®]) immunoassay technology enables low-abundant biomarker measurement in a variety of biofluids such as serum, plasma, and CSF.

Our newest kits measure the following with unparalleled sensitivity and precision:

- NF-L
- SNAP-25
- TDP-43

Discover more at

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Filtration & Monitoring Products