Quanterix®

PUBLICATION BRIEF

Traumatic Brain Injury (TBI)

NEUROLOGY

Advancing the Detection and Monitoring of Traumatic Brain Injuries with Simoa® Technology

Neurofilament light (NfL) is a cytoskeletal intermediate filament protein that is expressed in neurons and associates with neurofilament medium (NfM) and neurofilament heavy (NfH) to form neurofilaments. Neurofilaments can be released in significant quantities following axonal damage or neuronal degeneration and NfL has been shown to be associated with traumatic brain injury, multiple sclerosis, frontotemporal dementia, and other neurodegenerative diseases.

The need for a more sensitive method of measuring NfL, a critical biomarker associated with traumatic brain injury (TBI), is becoming increasingly important as we continue to see a rise TBI's worldwide. Simoa® NfL blood test is seen by many as an ultra-sensitive, accurate, and non-invasive method to detect NfL proteins. Researchers can now push the boundary of detection well beyond the current limit, thus allowing the examination of critical proteins at ultra-low, even baseline, levels.

Solutions to Advance Your Research

OPTIONS OF SIMOA®:

- *Purchase assays for use on the Quanterix SR-X™, or Simoa HD-X™ Analyzer platform*
- *Submit samples to our **Accelerator Laboratory** for analysis*
- *Choose between singleplex and multiplex assay options to measure NfL alone or with other biomarkers of interest, including GFAP, UCH-L1, and tau*

BENEFITS OF SIMOA®:

- *Access biomarker data with unparalleled sensitivity and accuracy*
- *Study health and disease with a less invasive approach*
- *Transform the way we detect diseases*
- *Advance scientific understanding of physiological effects, prognosis, and management of stroke*

SR-X™ Biomarker Detection System
The first benchtop instrument to offer true multiplex detection at both acute and baseline levels.

HD-X™ Analyzer
Delivering fully-automated ultra sensitive biomarker detection you can count on.

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Simoa® Technology Enables Best-in-Class Research to Advance Scientific Breakthroughs

Below represents a curated list of peer-reviewed publications where the Quanterix Simoa® assays were used as part of TBI/concussion studies.

Sports-Related Publications

Plasma Biomarker Concentrations Associated With Return to Sport Following Sport-Related Concussion in Collegiate Athletes—A Concussion Assessment, Research, and Education (CARE) Consortium Study

Pattinson et al 2020 JAMA Netw Open
doi.org/10.1001/jamanetworkopen.2020.13191

Neurofilament light and tau in serum after head-impact exposure in soccer

Brain Injury 2020
doi.org/10.1080/02699052.2020.1725129

Plasma glial fibrillary acidic protein and neurofilament light chain, but not tau, are biomarkers of sports-related mild traumatic brain injury

Brain Commun 2020
doi.org/10.1093/braincomms/fcaa137

Investigating the use of plasma pTau181 in retired contact sports athletes

J Neurology 2022
doi.org/10.1007/s00415-022-11223-7

Serum neurofilament light in professional soccer players: goal on safety

Neurological Sciences 2022
doi.org/10.1007/s10072-022-06109-5

Elevated Serum Interleukin-1β Levels in Male, but not Female, Collision Sport Athletes with a Concussion History

J Neurotrauma 2021
doi.org/10.1089/neu.2020.7479

Prolonged elevation of serum neurofilament light after concussion in male Australian football players

Biomark Res. 2021
doi.org/10.1089/neu.2020.7479

Military-Related Publications

Interleukin-6 is associated with acute concussion in military combat personnel

BMC Neurology 2020
doi.org/10.1186/s12883-020-01760-x

Exosomal neurofilament light: A prognostic biomarker for remote symptoms after mild traumatic brain injury?

Neurology 2020
doi.org/10.1212/WNL.0000000000009577

Neurotrauma Biomarker Levels and Adverse Symptoms Among Military and Law Enforcement Personnel Exposed to Occupational Overpressure Without Diagnosed Traumatic Brain Injury

Neurology 2021
doi.org/10.1001/jamanetworkopen.2021.6445

Extracellular vesicle neurofilament light is elevated within the first 12-months following traumatic brain injury in a U.S military population

Scientific reports. 2022
doi.org/110.1038/s41598-022-05772-0

Simoa® Technology Enables Best-in-Class Research to Advance Scientific Breakthroughs

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Military-Related Publications, continued

Brain and blood biomarkers of tauopathy and neuronal injury in humans and rats with neurobehavioral syndromes following blast exposure
Molecular Psychiatry 2021
doi.org/10.1038/s41380-020-0674-z

Plasma biomarkers associated with deployment trauma and its consequences in post-9/11 era veterans: initial findings from the TRACTS longitudinal cohort
Translational Psychiatry 2022
doi.org/10.1038/s41398-022-01853-w

Poor Sleep Quality is Linked to Elevated Extracellular Vesicle-Associated Inflammatory Cytokines in Warfighters with Chronic Mild Traumatic Brain Injuries
Front Pharmocol 2022
doi.org/10.3389/fphar.2021.762077

Other

ADHD May Associate with Reduced Tolerance to Acute Subconcussive Head Impacts: A Pilot Case-Control Intervention Study
Journal of Attention Disorders 2020
doi.org/10.1177/1087054720969977

Poor sleep correlates with biomarkers of neurodegeneration in mild traumatic brain injury patients: a CENC study
Sleep 2021
doi.org/10.1093/sleep/zsaa272

Scan the QR code with your smart phone camera to be directed to an archive of publications.