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Traumatic Brain Injury Biomarker Antibody Sampler Kit



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1 Kit (8 x 20 microliters)

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For Research Use Only. Not for Use in Diagnostic Procedures.

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
GFAP (E4L7M) XP [®] Rabbit mAb	80788	20 µl	50 kDa	Rabbit IgG
S100B (E7C3A) Rabbit mAb	90393	20 µl	10 kDa	Rabbit IgG
UCHL1 (D3T2E) XP [®] Rabbit mAb	13179	20 µl	27 kDa	Rabbit IgG
Neurofilament-L (C28E10) Rabbit mAb	2837	20 µl	70 kDa	Rabbit IgG
Enolase-2 (E7D7I) Rabbit mAb	65162	20 µl	47 kDa	Rabbit IgG
Tau (D1M9X) XP [®] Rabbit mAb	46687	20 µl	50-80 kDa	Rabbit IgG
Myelin Basic Protein (D8X4Q) XP [®] Rabbit mAb	78896	20 µl	12-18 kDa	Rabbit IgG
PSD95 (D27E11) XP [®] Rabbit mAb	3450	20 µl	95 kDa	Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat

Please visit cellsignal.com for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

Description

The Traumatic Brain Injury Biomarker Antibody Sampler Kit provides an economical means of detecting proteins involved in traumatic brain injury. The kit includes enough antibodies to perform two western blot experiments with each primary antibody.

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/mL BSA, 50% glycerol, and less than 0.02% sodium azide. Store at -20°C. *Do not aliquot the antibodies.*

Background

Traumatic brain injury (TBI) is a worldwide health issue that significantly affects the patient as well as their family. Annual total cost of nonfatal TBI in 2016 was \$40.6 billion in the United States (1). In addition to acute brain injury, even mild cases, can lead to cognitive impairment and long-term psychiatric changes. More long term, TBI patients exhibit lower resilience to neurodegenerative disease-associated pathology (2). Treatment of TBI is made more difficult due to lack of reliable biomarkers to detect TBI (3). Several proteins are of interest, which are candidates for measurement in blood after TBI. Glial fibrillary acidic protein (GFAP) is an astrocytic intermediate filament protein. As a cytoskeletal protein, GFAP helps provide structural support to astrocytes, which provide metabolic support to neurons and maintains the blood brain barrier. The number and size of astrocytes, in a process called astrogliosis, is also positively correlated with brain injury (4). Also abundantly expressed in astrocytes, S100B is commonly used as an astrocytic marker and is positively correlated with TBI (5). Neurofilament-L (NfL) and tau are part of the neuronal cytoskeleton that provide structure to axons. Axons are covered by a multi-layered membrane called the myelin sheath. Myelin basic protein (MBP) is enriched in myelin and helps maintain its structure. UCHL1 and Enolase-2 are ubiquitin hydrolases and glycolytic enzymes, respectively, that are enriched in neurons. PSD95 is an adaptor protein enriched at postsynaptic sites in neurons. After brain injury, neuron-enriched proteins, as well as proteins that maintain neuronal/axonal integrity, can be measured in the blood, reflecting neuronal damage (6).

Background References

1. Miller, G.F. et al. (2021) *Med Care* 59, 451-455.
2. van Amerongen, S. et al. (2022) *Dement Geriatr Cogn Dis Extra* 12, 122-130.
3. Alouani, A.T. and Elfouly, T. (2022) *Biomedicines* 10, 2472.
4. Yang, Z. and Wang, K.K. (2015) *Trends Neurosci* 38, 364-74.
5. Steinmüller, J.B. et al. (2022) *Neurotrauma Rep* 3, 447-455.
6. Lippa, S.M. et al. (2022) *Front Neurol* 13, 816625.

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