Revision 3

Store at -20C

#36833

Late-Onset Alzheimer's Disease Risk Gene Antibody Sampler Kit

1 Kit (9 x 20 microliters)

Cell Signaling TECHNOLOGY®

Orders: 877-616-CELL (2355) orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
BIN1 (E4A1P) Rabbit mAb	51844	20 µl	45-80 kDa	Rabbit IgG
SORL1 (D8D4G) Rabbit mAb	79322	20 µl	250 kDa	Rabbit IgG
TREM2 (D8I4C) Rabbit mAb	91068	20 µl	28 kDa	Rabbit IgG
ApoE (pan) (D7I9N) Rabbit mAb	13366	20 µl	35 kDa	Rabbit IgG
Clusterin (D7N2K) XP® Rabbit mAb	34642	20 µl	35-42, 65, 75 kDa	Rabbit IgG
ApoE4 (E5M4L) Rabbit mAb	39327	20 µl	35 kDa	Rabbit IgG
EphA1 (D6V7I) Rabbit mAb	90673	20 µl	130 kDa	Rabbit IgG
MEF2C (D80C1) XP® Rabbit mAb	5030	20 µl	50-60 kDa	Rabbit IgG
MHC Class II (LGII-612.14) Mouse mAb	68258	20 µl	25-35, 50-65 kDa	Mouse IgG1
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 Late-Onset Alzheimer's Disease Risk Gene Antibody Sampler Kit provides an economical means of detecting proteins identified as risk factors for late-onset Alzheimer's Disease (LOAD) by western blot. This kit includes enough antibodies to perform at least 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 antibody.*

Background

Alzheimer's Disease (AD) is the leading cause of dementia worldwide. Clinically, it is characterized by the presence of extracellular amyloid plaques and intracellular neurofibrillary tangles, which result in neuronal dysfunction and cell death (1). Genome-wide association studies (GWAS) have identified a cohort of risk genes associated with late-onset AD (LOAD), including, but not limited to, *APOE, BIN1, SORL1, TREM2, EphA1, MEF2C, CLU, and HLA-DRB1* (2,3).

APOE has three allele variants: ApoE2, ApoE3, and ApoE4. ApoE4 is associated with an increased risk of AD. Evidence suggests that this risk occurs through promotion of amyloid-beta plaque aggregation (1). ApoE4 is also associated with impaired microglial response, lipid transport, synaptic integrity and plasticity, glucose metabolism, and cerebrovascular integrity (4). Mutations in BIN1, primarily involved in endocytosis and maintaining cytoskeletal integrity in the brain, are suggested to play a role in the aggravation of tau pathology (5,6). Increased levels of BIN1 have been seen in AD postmortem brain tissue (6). SORL1 expression is decreased in the brain of AD patients (7). Studies have demonstrated a role for SORL1 as a neuronal sorting receptor that binds amyloid precursor protein (APP) and regulates its trafficking and proteolytic processing, thus regulating β-amyloid (Aβ) peptide production (8). The triggering receptor expressed on myeloid cells 2 (TREM2) is an innate immune receptor that is expressed on the cell surface of microglia, macrophages, osteoclasts, and immature dendritic cells (9). Research studies using AD mouse models indicate that deficiency and haploinsufficiency of TREM2 can lead to increased Aβ accumulation due to dysfunctional microglia response (10). EphA1 is a member of the ephrin family of receptor tyrosine kinases responsible for regulating cell morphology and motility (11). In the central nervous system (CNS), EphA1 plays a role in synaptic plasticity and axon guidance (12). EphA1 is involved in inflammatory signaling pathways (13), which may mean it plays a role in regulation of neuroinflammatory processes in AD (14). MEF2C is a member of the myocyte enhancer factor 2 (MEF2) family of transcription factors shown to play a role in learning and memory formation through regulation of synaptic plasticity (15). Studies have shown that MEF2C may play a role in age-related microglial activation through IFN-I associated MEF2C deregulation (16,17). MEF2C may also act as a modulator for APP proteolytic processing of Aβ (18,19). Clusterin (CLU) is a multifunctional glycoprotein shown to play a protective role in AD by sequestering Aβ40 peptides to form long-lived, stable complexes, which prevent amyloid fibril formation (20-22). Major histocompatibility complex class II (MHC class II) molecules are transmembrane glycoproteins expressed on the surface of antigen-

presenting cells that bind exogenous peptide antigens derived from endocytosed extracellular proteins digested in the lysosome (23,24). Increases in MHC class II-expressing microglia have been shown in AD brain (25).

Background References

1. Selkoe, D.J. (2001) *Physiol Rev* 81, 741-66.
2. Jansen, I.E. et al. (2019) *Nat Genet* 51, 404-413.
3. Zhang, Q. et al. (2020) *Nat Commun* 11, 4799.
4. Yamazaki, Y. et al. (2019) *Nat Rev Neurol* 15, 501-518.
5. Franzmeier, N. et al. (2019) *Nat Commun* 10, 1766.
6. Chapuis, J. et al. (2013) *Mol Psychiatry* 18, 1225-34.
7. Scherzer, C.R. et al. (2004) *Arch Neurol* 61, 1200-5.
8. Andersen, O.M. et al. (2005) *Proc Natl Acad Sci U S A* 102, 13461-6.
9. Colonna, M. (2003) *Nat Rev Immunol* 3, 445-53.
10. Wang, Y. et al. (2015) *Cell* 160, 1061-71.
11. Yamazaki, T. et al. (2009) *J Cell Sci* 122, 243-55.
12. Lai, K.O. and Ip, N.Y. (2009) *Curr Opin Neurobiol* 19, 275-83.
13. Ivanov, A.I. and Romanovsky, A.A. (2006) *IUBMB Life* 58, 389-94.
14. Villegas-Llerena, C. et al. (2016) *Curr Opin Neurobiol* 36, 74-81.
15. Rashid, A.J. et al. (2014) *Genes Brain Behav* 13, 118-25.
16. Xue, F. et al. (2021) *Neurobiol Dis* 152, 105272.
17. Deczkowska, A. et al. (2017) *Nat Commun* 8, 717.
18. Tang, S.S. et al. (2016) *Oncotarget* 7, 39136-39142.
19. Camargo, L.M. et al. (2015) *PLoS One* 10, e0115369.
20. Yerbury, J.J. et al. (2007) *FASEB J* 21, 2312-22.
21. Narayan, P. et al. (2011) *Nat Struct Mol Biol* 19, 79-83.
22. Desikan, R.S. et al. (2014) *JAMA Neurol* 71, 180-7.
23. Ting, J.P. and Trowsdale, J. (2002) *Cell* 109 Suppl, S21-33.
24. Cresswell, P. (1994) *Annu Rev Immunol* 12, 259-93.
25. Perlmutter, L.S. et al. (1992) *J Neurosci Res* 33, 549-58.

Trademarks and Patents

Limited Uses