Store at -20°C

Functional Neuron Marker Antibody Sampler Kit

#48510

Support: +1-978-867-2388 (U.S.)
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For Research Use Only. Not For Use In Diagnostic Procedures.

Product Includes	Product #	Quantity	Mol. Wt.	Isotype/Source
Tyrosine Hydroxylase (E2L6M) Rabbit mAb	58844	20 µL	55-60 kDa	Rabbit IgG
GAD2 (D5G2) XP® Rabbit mAb	5843	20 µL	60 kDa	Rabbit IgG
VGLUT2 (D7D2H) Rabbit mAb	71555	20 µL	65-70 kDa	Rabbit IgG
VGLUT1 Antibody	12331	20 µL	62 kDa	Rabbit
ChAT (E4F9G) Rabbit mAb	27269	20 µL	71 kDa	Rabbit IgG
GAD1 (D1F2M) Rabbit mAb	41318	20 µL	67 kDa	Rabbit IgG
5-HTR4 (D8O5K) Rabbit mAb	13690	20 µL	40-140 kDa	Rabbit IgG
β-2 Adrenergic Receptor (D6H2) Rabbit mAb	8513	20 µL	50-100 kDa	Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µL		Goat

See www.cellsignal.com for individual component applications, species cross-reactivity, dilutions, and additional application protocols.

Description: The Functional Neuron Marker Antibody Sampler Kit provides an economical means of detecting markers that facilitate phenotyping neurons by function. The kit includes enough antibodies to perform at least two western blot experiments with each primary antibody.

Background: Tyrosine hydroxylase (TH) catalyzes the rate-limiting step in the synthesis of the neurotransmitter dopamine and other catecholamines, and acts as a marker for dopaminergic neurons (1,2). Choline O-acetyltransferase (ChAT) is the enzyme that catalyzes synthesis of acetylcholine (ACh) in the central and peripheral nervous system. ChAT is found in high levels within cholinergic neurons and can be used to measure their functional states (3). Vesicular glutamate transporters 1 and 2 (VGLUT1 and VGLUT2) are responsible for transporting the excitatory neurotransmitter glutamate into synaptic vesicles of glutamatergic neurons. VGLUT1 and VGLUT2 are complimentarily expressed and act as markers for glutamatergic neurons (4). Glutamate decarboxylase (GAD) is the main enzyme that synthesizes GABA from glutamate. GABA producing neurons, called GABAergic neurons, utilize GABA as their major inhibitory neurotransmitter with both isoforms of GAD, GAD1, and GAD2, acting as functional markers for these neurons (5). β2-adrenergic receptor (β2AR) is a G protein-coupled receptor (GPCR) that mediates the actions of catecholamines, mainly through stimulation by epinephrine (adrenaline), in the central and peripheral nervous system (6,7). Serotonin receptor 4 (5-HTR4) is an excitatory GPCR that activates the cyclic AMP (cAMP)-PKA pathway (8,9). 5-HTR4 is located post-synaptically on serotonergic neurons (10).

Specificity: Each antibody in the Functional Neuron Marker Antibody Sampler Kit detects endogenous levels of its target protein.

Source/Purification: Monoclonal and polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Ala15 of human GAD1 protein, Ala361 of human 5-HTR4 protein, the amino terminus of human VGLUT1 and human VGLUT2 protein, and the carboxy terminus of human tyrosine hydroxylase protein, human GAD2 protein, human ChAT protein, and human β2-adrenergic receptor protein. Polyclonal antibodies are purified by protein A and peptide affinity chromatography.

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.*

Please visit www.cellsignal.com for validation data and a complete listing of recommended companion products.

Background References:

(1) Kumer, S.C. and Vrana, K.E. (1996) *J Neurochem* 67, 443-62.

(2) Weihe, E. et al. *Cell Mol Neurobiol* 26, 659-78.

(3) Oda, Y. (1999) *Pathol Int* 49, 921-37.

(4) Ziegler, D.R. et al. (2002) *J Comp Neurol* 448, 217-29.

(5) Le, T.N. et al. (2017) *J Neurosci* 37, 8816-8829.

(6) Wu, Y. et al. (2021) *Biomolecules* 11, 936. doi: 10.3390/biom11070936.

(7) Wallukat, G. (2002) *Herz* 27, 683-90.

(8) Nichols, D.E. and Nichols, C.D. (2008) *Chem Rev* 108, 1614-41.

(9) Karayol, R. et al. (2021) *Mol Psychiatry* 26, 2334-2349.

(10) Samuels, B.A. et al. (2016) *Neuroscientist* 22, 26-45.

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Applications: **W**—Western **IP**—Immunoprecipitation **IHC**—Immunohistochemistry **ChIP**—Chromatin Immunoprecipitation **IF**—Immunofluorescence **F**—Flow cytometry **E-P**—ELISA-Peptide **Species Cross-Reactivity:** **H**—human **M**—mouse **R**—rat **Hm**—hamster **Mk**—monkey **Mi**—mink **C**—chicken **Dm**—D. melanogaster **X**—Xenopus **Z**—zebrafish **B**—bovine **Dg**—dog **Pg**—pig **Sc**—S. cerevisiae **Ce**—C. elegans **Hr**—Horse **All**—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.