

# AChR $\alpha$ 4 (A-6): sc-74519

## BACKGROUND

Members of the ligand-gated ion channel receptor family are characterized by their fast transmitting response to neurotransmitters. Two important members of this family are the nicotinic acetylcholine and glutamate receptors, both of which are composed of five homologous subunits forming a transmembrane aqueous pore. These transmembrane receptors change conformation in response to their cognate neurotransmitter. Nicotinic acetylcholine receptors are found at the postsynaptic membrane of the neuromuscular junction and bind acetylcholine molecules, allowing ions to move through the pore. Glutamate receptors are found in the postsynaptic membrane of cells in the central nervous system. The activity that is generated at the synapse by the binding of acetylcholine is terminated by acetylcholinesterase, an enzyme that rapidly hydrolyzes acetylcholine. AChR $\alpha$ 4, also known as EBN, BFNC, EBN1, NACHR, NACRA4, NACHRA4 or CHRNA4, is a 627 amino acid multi-pass membrane protein associated with nocturnal frontal lobe epilepsy type 1 (ENFL1), an autosomal dominant epilepsy characterized by nocturnal seizures with hyperkinetic automatisms and poorly organized stereotyped movements.

## CHROMOSOMAL LOCATION

Genetic locus: CHRNA4 (human) mapping to 20q13.33; Chrna4 (mouse) mapping to 2 H4.

## SOURCE

AChR $\alpha$ 4 (A-6) is a mouse monoclonal antibody raised against amino acids 342-474 mapping near the C-terminus of AChR $\alpha$ 4 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

AChR $\alpha$ 4 (A-6) is available conjugated to agarose (sc-74519 AC), 500  $\mu$ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-74519 HRP), 200  $\mu$ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-74519 PE), fluorescein (sc-74519 FITC), Alexa Fluor<sup>®</sup> 488 (sc-74519 AF488), Alexa Fluor<sup>®</sup> 546 (sc-74519 AF546), Alexa Fluor<sup>®</sup> 594 (sc-74519 AF594) or Alexa Fluor<sup>®</sup> 647 (sc-74519 AF647), 200  $\mu$ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor<sup>®</sup> 680 (sc-74519 AF680) or Alexa Fluor<sup>®</sup> 790 (sc-74519 AF790), 200  $\mu$ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

## APPLICATIONS

AChR $\alpha$ 4 (A-6) is recommended for detection of AChR $\alpha$ 4 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

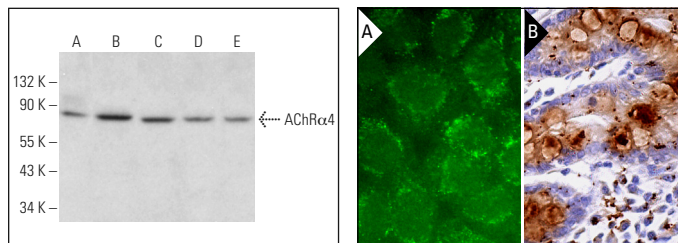
Suitable for use as control antibody for AChR $\alpha$ 4 siRNA (h): sc-42528, AChR $\alpha$ 4 siRNA (m): sc-42529, AChR $\alpha$ 4 shRNA Plasmid (h): sc-42528-SH, AChR $\alpha$ 4 shRNA Plasmid (m): sc-42529-SH, AChR $\alpha$ 4 shRNA (h) Lentiviral Particles: sc-42528-V and AChR $\alpha$ 4 shRNA (m) Lentiviral Particles: sc-42529-V.

Molecular Weight of AChR $\alpha$ 4: 78 kDa.

## STORAGE

Store at 4° C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## DATA



AChR $\alpha$ 4 (A-6): sc-74519. Western blot analysis of AChR $\alpha$ 4 expression in SolB (A), BYDP (B), L6 (C), SJRH30 (D) and A-431 (E) whole cell lysates.

AChR $\alpha$ 4 (A-6): sc-74519. Immunofluorescence staining of formalin-fixed A-431 cells showing cytoplasmic localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human small intestine tissue showing cytoplasmic staining of glandular cells (B).

## SELECT PRODUCT CITATIONS

- Yan, J., et al. 2010. The cessation and detoxification effect of tea filters on cigarette smoke. *Sci. China Life Sci.* 53: 533-541.
- Di, X., et al. 2012. L-theanine inhibits nicotine-induced dependence via regulation of the nicotine acetylcholine receptor-dopamine reward pathway. *Sci. China Life Sci.* 55: 1064-1074.
- Becker, S., et al. 2013. Acquisition of RGC phenotype in human Müller glia with stem cell characteristics is accompanied by upregulation of functional nicotinic acetylcholine receptors. *Mol. Vis.* 19: 1925-1936.
- Condorelli, R.A., et al. 2017. Nicotine effects and receptor expression on human spermatozoa: possible neuroendocrine mechanism. *Front. Physiol.* 8: 177.
- Zhao, D., et al. 2020. PCB52 exposure alters the neurotransmission ligand-receptors in male offspring and contributes to sex-specific neurodevelopmental toxicity. *Environ. Pollut.* 264: 114715.
- Harmych, S.J., et al. 2020. Nicotine inhibits MAPK signaling and spheroid invasion in ovarian cancer cells. *Exp. Cell Res.* 394: 112167.
- Lupacchini, L., et al. 2020. Nicotine changes airway epithelial phenotype and may increase the SARS-COV-2 infection severity. *Molecules* 26: E101.
- El-Mezayen, N.S., et al. 2022. Vitamin B12 as a cholinergic system modulator and blood brain barrier integrity restorer in Alzheimer's disease. *Eur. J. Pharm. Sci.* 174: 106201.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.

Alexa Fluor<sup>®</sup> is a trademark of Molecular Probes, Inc., Oregon, USA