

Product datasheet for **TA328607**

Nicotinic Acetylcholine Receptor alpha 4 (CHRNA4) Rabbit Polyclonal Antibody

Product data:

Product Type:	Primary Antibodies
Applications:	FC, IHC, WB
Recommended Dilution:	WB: 1:200-1:2000; IHC: 1:100-1:3,000; FC: 1:50-1:600
Reactivity:	Human, Mouse, Rat
Host:	Rabbit
Clonality:	Polyclonal
Immunogen:	Peptide (C)DLVNMHSRVDQLD, corresponding to amino acid residues 190-202 of human nAChRa4. Extracellular, N-terminus.
Formulation:	Lyophilized. Concentration before lyophilization ~0.8mg/ml (lot dependent, please refer to CoA along with shipment for actual concentration). Buffer before lyophilization: Phosphate buffered saline (PBS), pH 7.4, 1% BSA, 0.025% NaN ₃ .
Reconstitution Method:	Add 50 ul double distilled water (DDW) to the lyophilized powder.
Purification:	Affinity purified on immobilized antigen.
Conjugation:	Unconjugated
Storage:	Store at -20°C as received.
Stability:	Stable for 12 months from date of receipt.
Gene Name:	cholinergic receptor nicotinic alpha 4 subunit
Database Link:	NP_000735 Entrez Gene 11438 Mouse Entrez Gene 25590 Rat Entrez Gene 1137 Human P43681



[View online »](#)

Background:

Acetylcholine, released by cholinergic neurons, activates two groups of acetylcholine receptors (AChRs); muscarinic AChRs (mAChRs) which belong to the superfamily of G-protein coupled receptors (GPCRs) and nicotinic AChRs (nAChRs) which belong to the ligand-gated ion channel superfamily. nAChRs also respond to nicotine, hence their name. These channel receptors are usually non-selective cation channels activated upon ligand binding which ultimately leads to the depolarization of postsynaptic cell membranes. To date, 17 different but related subunits of nAChRs have been identified and cloned. They consist of a subunits (α1-10), which is responsible for the binding of ligands. In fact, this subunit includes a Cys-loop in the first extracellular domain that is required for agonist binding. The other subunits responsible for making up the active receptor are the β (β1-4), γ, δ and ε subunits. Structurally, all subunits have the following: a conserved large extracellular N-terminal domain, 3 conserved transmembrane domains, a variable cytoplasmic loop and a fourth transmembrane domain with a short extracellular C-terminal domain. An active nAChR is generally a heteropentamer (homopentamers also exist) of these various subunits organized around a central pore. All subunits are expressed in neuronal cells except for the α1 subunit which is specifically expressed in skeletal muscle. They are also expressed in non-neuronal cells such as bronchial epithelial cells, as well lymphocytes. The diversity of these receptors and their functional organization gives rise to unique properties and functions. The α4β2 receptor composition makes up a high affinity nicotinic receptor. In fact, its upregulation (mainly expressed by the increase of functional receptors at the membrane and not expression per se) is responsible for the increased appearance of binding sites following nicotine administration. Animal studies have shown that nAChR-related mechanisms are involved in attention function. Indeed α4β2 nAChR seems to also be involved in attention-deficit hyperactivity disorder (ADHD), a disease distinguished by a lack of attention, distractibility and hyperactivity. The α4β2 and α7 nAChRs appear to be critical in rats for attention and working memory. Also, an α4β2 specific agonist was shown to reduce impulsivity, hyperactivity and attention deficits in adults with ADHD. This same receptor subtype may also be involved in Parkinson's disease (PD) as smoking and α4β2 nAChR agonists show beneficial effects in PD.

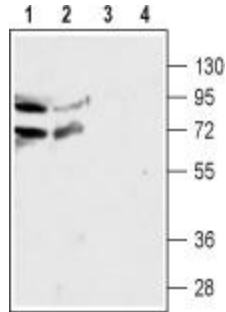
Synonyms:

BFNC; EBN; EBN1; NACHR; NACHRA4; NACRA4

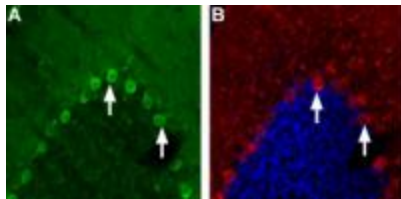
Protein Families:

Druggable Genome, Ion Channels: Cys-loop Receptors, Transmembrane

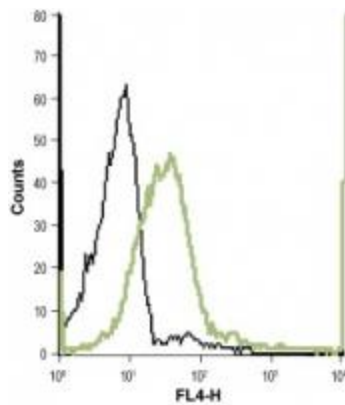
Product images:



Western blot analysis of rat (lanes 1 and 3) and mouse (lanes 2 and 4) brain cell lysates: 1, 2. Anti-Nicotinic Acetylcholine Receptor a4 (extracellular) antibody, (1:200). 3, 4. Anti-Nicotinic Acetylcholine Receptor a4 (extracellular) antibody, preincubated with the control peptide antigen.



pression of nAChaa4 in rat cerebellum. Immunohistochemical staining of immersion-fixed, free floating rat brain frozen sections using Anti-Nicotinic Acetylcholine Receptor a4 (extracellular) antibody, (1:200). A. Expression of nAChRa4 (green) was visualized in rat cerebellum. Purkinje cells were positive for nAChRa4 (arrows). B. The same section was stained for Parvalbumin (red) and counterstained (blue).



Indirect flow cytometry analysis in live intact Jurkat (human T cell leukemia) cell line: black line, Unstained cells + goat-anti-rabbit-Cy5. green line, Cells + Anti-Nicotinic Acetylcholine Receptor a4 (extracellular) antibody, (1:20) + goat-anti-rabbit-Cy5.