PRODUCT INFORMATION

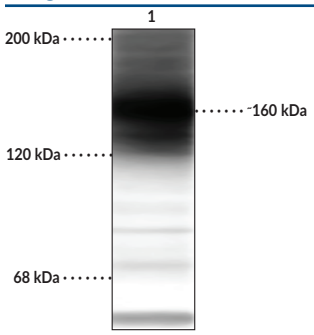
Adenylate Cyclase Type 3 Polyclonal Antibody

Item No. 29250

Overview and Properties

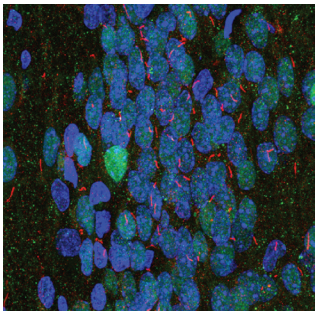
Contents: This vial contains 100 µl of affinity-purified polyclonal antibody.
Synonyms: ACIII, Adenylyl Cyclase 3, Adenylate Cyclase III, Adenylyl Cyclase Type III
Immunogen: Synthetic peptide corresponding to the C-terminal region of rat adenylate cyclase type 3 conjugated to KLH
Molecular Weight: ~160 kDa
Species Reactivity: (+) Human, mouse, rat
Form: Liquid
Storage: -20°C (as supplied)
Stability: ≥1 year
Storage Buffer: PBS with 5 mM sodium azide and 50% glycerol
Host: Rabbit
Applications: Immunocytochemistry (ICC), immunohistochemistry (IHC), and Western blot (WB); the recommended starting dilution is 1:500-1:10,000 for ICC, 1:10,000 for IHC, and 1:2,000 for WB. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

Images

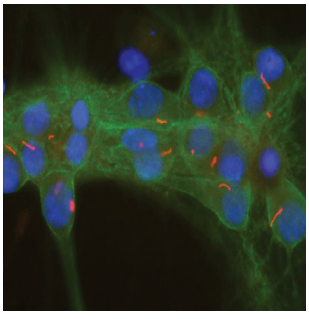


Lane 1: Rat cortical lysate

WB of rat cortical lysate showing specific immunolabeling of the ~160 kDa adenylate cyclase type 3 protein.



Immunolabeling of a section of rat hippocampus selectively labeling the neuronal cilia with Adenylate Cyclase Type 3 Polyclonal Antibody (red), labeling nuclei with an MeCP2 (methyl-CpG binding protein 2) antibody (green), and Hoechst staining of nuclear DNA.



Immunolabeling of cultured rat neurons and glia showing strong staining of neuronal cilia using Adenylate Cyclase Type 3 Polyclonal Antibody (red) and axonal and dendritic staining using an alpha II spectrin antibody (green), revealing the submembranous cytoskeleton and DNA (blue).

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Description

Adenylate cyclase type 3 (AC3) is a membrane-bound protein that catalyzes the formation of the second messenger cAMP from ATP (Item No. 14498) in response to G protein-coupled receptor (GPCR) signaling.[1,2] It consists of 1,144 amino acids and is comprised of a cytoplasmic N-terminus followed by two repeating modules, each consisting of a transmembrane domain and a cytoplasmic domain, with the transmembrane domains composed of six membrane-spanning helices apiece.[1,3] *ADCY3*, the gene encoding AC3, is expressed in a variety of tissues, with high levels in the placenta, testes, ovaries, and colon in humans.[1,3] AC3 also localizes to primary cilia in the brain and has been used as a marker of primary cilia in mouse brain.[4,5] Mutations in *ADCY3* are associated with an increased risk of obesity and type 2 diabetes.[2-4] Cayman's Adenylate Cyclase Type 3 Polyclonal Antibody can be used for immunocytochemistry (ICC), immunohistochemistry (IHC), and Western blot (WB) applications. The antibody recognizes AC3 at approximately 160 kDa from human, mouse, and rat samples.

References

1. Ludwig, M.-G. and Seuwen, K. Characterization of the human adenylyl cyclase gene family: cDNA, gene structure, and tissue distribution of the nine isoforms. *J. Recept. Signal Transduct. Res.* **22(1-4)**, 79-110 (2002).
2. Grarup, N., Moltke, I., Andersen, M.K., *et al.* Loss-of-function variants in *ADCY3* increase risk of obesity and type 2 diabetes. *Nat. Genet.* **50(2)**, 172-174 (2018).
3. Saeed, S., Bonnefond, A., Tamanini, F., *et al.* Loss-of-function mutations in *ADCY3* cause monogenic severe obesity. *Nat. Genet.* **50(2)**, 175-179 (2018).
4. Barroso, I. *ADCY3*, neuronal primary cilia and obesity. *Nat. Genet.* **50(2)**, 166-167 (2018).
5. Bishop, G.A., Berbari, N.F., Lewis, J., *et al.* Type III adenylyl cyclase localizes to primary cilia throughout the adult mouse brain. *J. Comp. Neurol.* **505(25)**, 562-571 (2007).

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