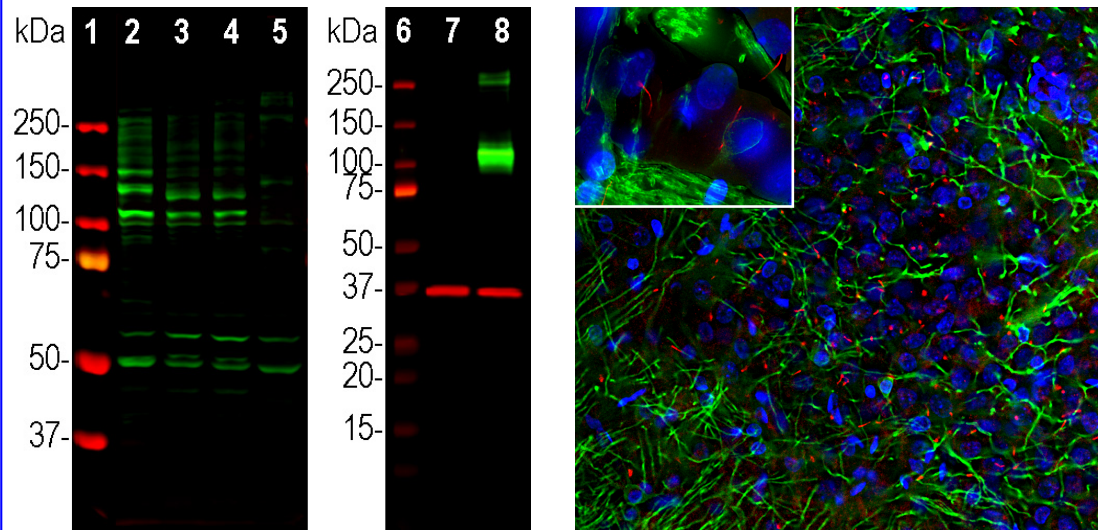


**Ordering Information**  
 Web [www.encorbio.com](http://www.encorbio.com)  
 Email [admin@encorbio.com](mailto:admin@encorbio.com)  
 Phone 352-372-7022  
 Fax 352-372-7066

**HGNC Name:** ADCY3  
**UniProt:** P21932  
**RRID:** AB\_2744500  
**Immunogen:** C-terminal peptide of rat ACIII, PAAFPNGSSVTLPHQVVDNP with a Cys added to the N-terminus to allow coupling to KLH.  
**Format:** Affinity purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaH<sub>2</sub>PO<sub>4</sub>  
**Storage:** Store at 4°C for short term, and at -20°C for longer term.  
**Recommended dilutions:**  
 WB: 1:500-1:1,000, IF/ICC 1:5,000-1:10,000, IHC not recommended

**References:**  
 1. Fuchs JL, Schwark HD. Neuronal primary cilia: a review. *Cell Biol. Int.* 28:111-8 (2004). 2. Louvi A and Grove EA. Cilia in the CNS: the quiet organelle claims center stage. *Neuron* 69:1046-60 (2011). 3. Singla V, Reiter JF. The primary cilium as the cell's antenna: signaling at a sensory organelle. *Science* 313:629-33 (2006). 4. Green JA, Mykytyn K. Neuronal Primary Cilia: An Underappreciated Signaling and Sensory Organelle in the Brain. *Neuropsychopharmacol.* 39:244-5 (2014). 5. May-Simera HL, Kelley MW. Cilia, Wnt signaling, and the cytoskeleton. *Cilia* 2:1:7 (2012). 6. Guemez-Gamboa A, et al. Primary cilia in the developing and mature brain. *Neuron* 82:511-21 (2014). 7. Guadiana SM, et al. Arborization of Dendrites by developing neocortical neurons is dependent on primary cilia and Type 3 adenylyl cyclase. *J. Neurosci.* 33:2626-38 (2013).

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC	Chicken		~120kDa and above	Rt, Ms



Western blot analysis of different tissue lysates using chicken pAb to ACIII, CPCA-ACIII, dilution 1:1,000, in green. On the left blot: [1] protein standard, [2] rat hippocampus, [3] mouse hippocampus, [4] mouse frontal cortex, and [5] cow frontal cortex. CPCA-ACIII antibody detects variably glycosylated forms of ACIII protein with apparent molecular weights from ~120kDa and higher. On the right blot: [6] protein standard, [7] non-transfected HEK293 cells, and [8] HEK293 cells transfected with DNA expressing Myc-DDK tagged full length human adenylate cyclase III from the appropriate cDNA (ACIII). The strong band at about 130kDa demonstrates overexpression of the ACIII protein, and those over 250kDa double band presumably corresponds to heavily glycosylated or aggregated forms of ACIII. The same blot was simultaneously probed with mouse mAb to GAPDH, MCA-1D4, dilution 1:5,000, in red, which reveals the single GAPDH band at ~37kDa in both transfected and non-transfected cells.

Immunofluorescence analysis of rat cortex section stained with chicken pAb to adenylate cyclase III, CPCA-ACIII, dilution 1:10,000, in red and costained with mouse mAb to the myelin and oligodendrocyte marker CNP, MCA-1H10, dilution 1:1,000 in green. The blue is Hoechst staining of nuclear DNA. The ACIII antibody reveals neuronal cilia while the CNP antibody stains oligodendrocytes and the myelin sheath around axons.

**Background:** Trimeric G-proteins are a large and variable family of membrane receptors. On binding their specific ligand they activate specific members of the family of trimeric G-proteins which in turn activate other signalling enzymes. Adenylate cyclases are one of these downstream enzyme families which are activated by the GTP bound Gαs subunits of trimeric G-proteins. Adenylate cyclases are responsible for the production of the important "second messenger" signaling molecule cyclic-AMP which in turn activates the cAMP dependent protein kinase. This kinase when activated phosphorylates numerous substrate molecules on serine or threonine residues and so alters their activity. There are several different adenylate cyclase genes and protein products with each have distinctly different distribution patterns in cells and tissues. The type III adenylate cyclase enzyme is specifically localized in the membranes surrounding neuronal cilia, and is activated by specific G-protein coupled receptors also located in cilia (1-5). Neuronal cilia express a variety of other receptors types and mediators of other signaling pathways and appear to function as a unique and complex neuronal sensory structure (1-5). For examples, the somatostatin 3 receptor, neuropeptide Y 2 receptor and melanin concentrating hormone receptor 1 are localized in neuronal cilia and the sonic hedgehog and Wnt signalling pathway act on neurons primarily through neuronal cilia (6). This antibody is an excellent marker of neuronal cilia in the brain and in cells in tissue culture and works in the same way as our rabbit polyclonal made against the same peptide (7). The CPCA-ACIII antibody was made against the extreme C-terminal peptide of rat ACIII, PAAFPNGSSVTLPHQVVDNP, amino acids 1125-1144 of the Genbank entry [NP\\_570135.2](http://www.ncbi.nlm.nih.gov/nuccore/570135.2). A cysteine residue was added to the N-terminus to allow coupling to MBS-activated keyhole limpet hemocyanin. The antibody works on mouse cells which express the same peptide and also on human cells, presumably because the corresponding peptide in the human AC3 sequence is the closely related peptide LATFPNGSPVTLPHQVVDNS. The antibody works well to identify neuronal cilia on human and rodent cells in IF and ICC, but is not recommended for IHC. We have also generated a mouse monoclonal and a rabbit polyclonal antibody to the same ACIII peptide, [MCA-1A12](#) and [RPCA-ACIII](#).

**FOR RESEARCH USE ONLY. NOT INTENDED FOR DIAGNOSTIC OR THERAPEUTIC USE.**

### Abbreviation Key:

**mAb—Monoclonal Antibody pAb—Polyclonal Antibody WB—Western Blot IF—Immunofluorescence ICC—Immunocytochemistry IHC—Immunohistochemistry E—ELISA Hu—Human Mo—Monkey Do—Dog Rt—Rat Ms—Mouse Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.**

**FOR RESEARCH USE ONLY. NOT INTENDED FOR DIAGNOSTIC OR THERAPEUTIC USE.**

**Abbreviation Key:**

*mAb—Monoclonal Antibody pAb—Polyclonal Antibody WB—Western Blot IF—Immunofluorescence ICC—Immunocytochemistry IHC—Immunohistochemistry E—ELISA Hu—Human Mo—Monkey Do—Dog Rt—Rat Ms—Mouse Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.*