

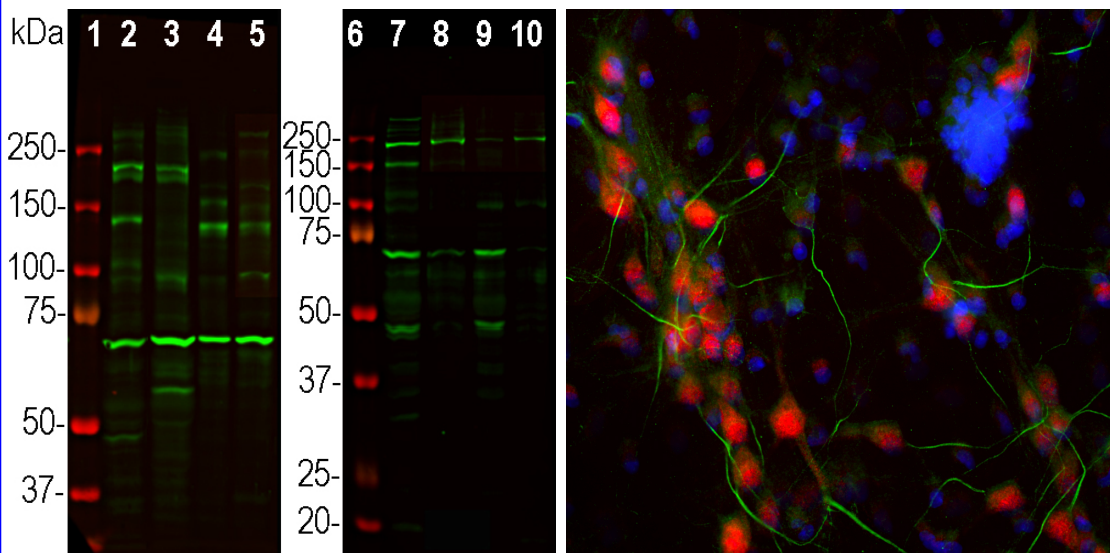
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HGNC Name: ANK3
UniProt: Q12955
RRID: AB_2737591
Immunogen: The C-terminal 398 amino acids of human ankyrin 3 expressed in and purified from *E. coli*
Format: Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN₃
Storage: Store at 4°C for short term, for longer term at -20°C.
Recommended dilutions:
 WB: 1:5,000-1:10,000. IF/ICC 1:500-1:1,000. IHC not recommended

References:

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- Kordeli, E, Lambert, S, Bennett, V. AnkyrinG. *J. Biol. Chem.* 270:2352-9 (1995).
- Mosavi LV, Cammett TJ, Desrosiers DC, Peng Z. The ankyrin repeat as molecular architecture for protein recognition. *Protein Sci.* 13:1435-48 (2004).
- Feinstein E, et al. The death domain: a module shared by proteins with diverse cellular functions. *Trends Biochem. Sci.* 20:342-4 (1995).
- Cunha SR, Mohler PJ. Ankyrin protein networks in membrane formation and stabilization. *J. Cell Mol. Med.* 13:4364-76 (2009).
- Lopez AY, et al. Ankyrin-G isoform imbalance and interneuronopathy link epilepsy and bipolar disorder. *Mol. Psychiatry* 22:1464-72 (2017).
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Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Chicken	IgY	480, 270, and 190kDa	Hu, Rt, Ms, Co, Mo



Western blot analysis of different tissue and cell lysates using chicken pAb to ankyrin 3, CPCA-ANK3, dilution 1:3,000, in green. [1, 6] Protein standard, [2] Rat brain, [3] Cow cortex, [4] HEK293 cells, [5] COS-1 cells, [7] Rat cortex, [8] rat cortex membrane enriched fraction, [9] mouse cortex, [10] mouse cortex membrane enriched fraction. Bands at 60-190kDa represent ankyrin 3 splice variants and proteolytic fragments. Larger ankyrin 3 isoforms of 270kDa and 480kDa can be seen on longer exposure of the blots.

Immunofluorescent analysis of cortical neuron-glia cell culture from E20 rat stained with chicken pAb to ankyrin 3, CPCA-ANK3, dilution 1:2,000 in green, and costained with mouse mAb to FOX3/NeuN, MCA-1B7, dilution 1:2,000 in red. The blue is Hoechst staining of nuclear DNA. The CPCA-ANK3 antibody stains the axonal initial segments, while the FOX3/NeuN antibody reveals perikarya and nuclei of neurons.

Background:

The first ankyrin protein was isolated from red blood cell membranes and was found to be responsible for anchoring the spectrin cytoskeleton to the plasma membrane. Subsequently this protein was named ankyrin 1 and a close homolog was named ankyrin 2, though the two proteins are also known as ankyrin R and ankyrin B, for erythrocyte and brain respectively (2). Both proteins are large at about 200kDa. A third member of the protein family was discovered and called ankyrin 3, also known as ankyrin G, some forms of which are much larger in molecular size, up to 480kDa. G refers to giant or general, as this protein is large and widely expressed (2). All three ankyrins have an N-terminal segment composed of 22 tandem repeats each of 33 amino acids which have been named **ankyrin type repeats**. A subset of these repeats are responsible for binding the ankyrin proteins to various membrane proteins, and repeats of this kind are found in many other proteins and generally mediate specific protein-protein interactions (3). The middle region of the molecules contain the spectrin binding activity and the C-terminal contains a **DEATH** domain and some other sequence which is variable between the three ankyrins. DEATH domains are involved in activating apoptotic pathways, and are found in many molecules of known apoptotic function such as the TNF receptor and Fas/Apo1 (4). The much larger size of ankyrin 3 is due to a sequence which may be inserted within this C-terminal region. The ankyrin 3 gene may produce a protein of 480kDa while other transcripts produce 270kDa and 190kDa proteins. Defects in the ankyrin gene are associated with various human disorders (5,6). Ankyrin 3 is expressed in the axon initial segment and the nodes of Ranvier in the nervous system so appropriate antibodies are useful to identify these regions (7). The function of ankyrin 3 appears to be to specifically localize channels and other cytoskeletal proteins at these regions.

The CPCA-ANK3 antibody was made against the C-terminal 398 amino acid of human isotype 1 in [NP_066267.2](https://www.ncbi.nlm.nih.gov/nuccore/NP_066267.2). This segment is expressed by all ankyrin 3 three isoforms and contains the DEATH domain sequence. The antibody works well for IF and ICC, but is not recommended for IHC. EnCor also supplies a mouse monoclonal and a rabbit polyclonal to this protein made using the same immunogen, [MCA-2A8](#) and [RPCA-ANK3](#).

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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.