

Arc (C-7): sc-17839

BACKGROUND

Growth factor stimulation has been shown to induce the expression of immediate early genes in non-neuronal cells, which encode a variety of molecules that are potentially involved in long-term cellular responses. Similar responses induced by neurotransmitter stimulation have also been seen in neuronal cells and evidence suggests that protein synthesis is required for long-term synaptic plasticity. Arc (for activity-regulated cytoskeleton-associated protein) is a growth factor and immediate early gene that is enriched in brain. Arc mRNA and protein levels are induced by neuronal activity, which is necessary to stimulate neuroplasticity, indicating a potential role for Arc in activity-dependent changes in dendrite function. Arc expression has been detected in neuronal cell bodies and dendrites in the hippocampus, amygdala, hypothalamus, striatum and cortex. Arc has been shown to localize to the cytoskeleton of neuronal cells and appears to co-localize with F-Actin, although it may associate with an Actin-associated protein rather than directly with F-Actin. It has been shown that cocaine-stimulated neuronal activity results in increased Arc mRNA levels in striatum.

CHROMOSOMAL LOCATION

Genetic locus: ARC (human) mapping to 8q24.3; Arc (mouse) mapping to 15 D3.

SOURCE

Arc (C-7) is a mouse monoclonal antibody raised against amino acids 1-300 of Arc (activity regulated cytoskeleton associated protein) of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Arc (C-7) is available conjugated to agarose (sc-17839 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-17839 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-17839 PE), fluorescein (sc-17839 FITC), Alexa Fluor[®] 488 (sc-17839 AF488), Alexa Fluor[®] 546 (sc-17839 AF546), Alexa Fluor[®] 594 (sc-17839 AF594) or Alexa Fluor[®] 647 (sc-17839 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-17839 AF680) or Alexa Fluor[®] 790 (sc-17839 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

Arc (C-7) is recommended for detection of ARC of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:500), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

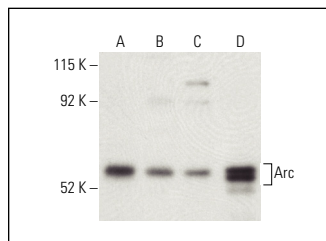
Suitable for use as control antibody for Arc siRNA (h): sc-29721, Arc siRNA (m): sc-29724, Arc shRNA Plasmid (h): sc-29721-SH, Arc shRNA Plasmid (m): sc-29724-SH, Arc shRNA (h) Lentiviral Particles: sc-29721-V and Arc shRNA (m) Lentiviral Particles: sc-29724-V.

Molecular Weight of Arc: 55 kDa.

STORAGE

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

DATA



Arc (C-7): sc-17839. Western blot analysis of Arc expression in U-87 MG (A), SH-SY5Y (B), AN3 CA (C) and Neuro-2A (D) whole cell lysates. Detection reagent used: m-IgG Fc BP-HRP: sc-525409.

SELECT PRODUCT CITATIONS

- Li, L., et al. 2005. The neuroplasticity-associated Arc gene is a direct transcriptional target of early growth response (Egr) transcription factors. *Mol. Cell. Biol.* 25: 10286-10300.
- Di Prisco, G.V., et al. 2014. Translational control of mGluR-dependent long-term depression and object-place learning by eIF2 α . *Nat. Neurosci.* 17: 1073-1082.
- Bojovic, O., et al. 2015. Time course of immediate early gene protein expression in the spinal cord following conditioning stimulation of the sciatic nerve in rats. *PLoS ONE* 10: e0123604.
- Liang, Z., et al. 2016. The pseudokinase CaMKv is required for the activity-dependent maintenance of dendritic spines. *Nat. Commun.* 7: 13282.
- Huang, H., et al. 2017. Cdk5-dependent phosphorylation of liprin α 1 mediates neuronal activity-dependent synapse development. *Proc. Natl. Acad. Sci. USA* 114: E6992-E7001.
- Pastuzyn, E.D., et al. 2018. The neuronal gene Arc encodes a repurposed retrotransposon gag protein that mediates intercellular RNA transfer. *Cell* 172: 275-288.e18.
- Scarlata, M.J., et al. 2019. Chemogenetic stimulation of the infralimbic cortex reverses alcohol-induced fear memory overgeneralization. *Sci. Rep.* 9: 6730.
- Cao, H., et al. 2020. Retinoid X receptor α regulates DHA-dependent spino-genesis and functional synapse formation *in vivo*. *Cell Rep.* 31: 107649.
- Liu, Y., et al. 2021. CHIP promotes Wnt signaling and regulates Arc stability by recruiting and polyubiquitinating LEF1 or Arc. *Cell Death Discov.* 7: 5.

RESEARCH USE

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

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