

Arc (E-19): sc-6382

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 colocalize 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.

REFERENCES

1. Greenberg, M.E., et al. 1986. Stimulation of neuronal acetylcholine receptors induces rapid gene transcription. *Science* 234: 80-83.
2. Montarolo, P.G., et al. 1986. A critical period for macromolecular synthesis in long-term heterosynaptic facilitation in Aplysia. *Science* 234: 1249-1254.
3. Lau, L.F., et al. 1991. Genes induced by serum growth factors. In Cohen, P. and Foulkes, J.G., eds., *The Hormonal Control of Gene Transcription*, Vol. 6: Molecular Aspects of Cell Regulation. Amsterdam: Elsevier Science Publishers, 257-293.

CHROMOSOMAL LOCATION

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

SOURCE

Arc (E-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the N-terminus of Arc of rat origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-6382 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

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

RESEARCH USE

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

APPLICATIONS

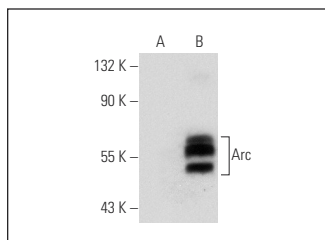
Arc (E-19) is recommended for detection of Arc of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (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.

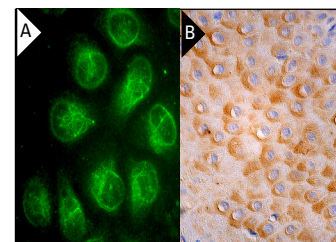
Molecular Weight of Arc: 55 kDa.

Positive Controls: SH-SY5Y cell lysate: sc-3812, Arc (h): 293T Lysate: sc-170140 or U-87 MG cell lysate: sc-2411.

DATA



Arc (E-19): sc-6382. Western blot analysis of Arc expression in non-transfected: sc-117752 (A) and human Arc transfected: sc-170140 (B) 293T whole cell lysates.



Arc (E-19): sc-6382. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human oral mucosa tissue showing cytoplasmic staining of squamous epithelial cells (B).

SELECT PRODUCT CITATIONS

1. Rodriguez, J.J., et al. 2005. Long-term potentiation in the rat dentate gyrus is associated with enhanced Arc/Arg3.1 protein expression in spines, dendrites and glia. *Eur. J. Neurosci.* 21: 2384-2396.
2. Wang, K.H., et al. 2006. *In vivo* two-photon imaging reveals a role of Arc in enhancing orientation specificity in visual cortex. *Cell* 126: 389-402.
3. Messaoudi, E., et al. 2007. Sustained Arc/Arg3.1 synthesis controls longterm potentiation consolidation through regulation of local Actin polymerization in the dentate gyrus *in vivo*. *J. Neurosci.* 27: 10445-10455.
4. Rodríguez, J.J., et al. 2008. Arg3.1/Arc expression in hippocampal dentate gyrus astrocytes: ultrastructural evidence and co-localization with glial fibrillary acidic protein. *J. Cell. Mol. Med.* 12: 671-678.



Try **Arc (C-7): sc-17839** or **Arc (E-7): sc-55475**, our highly recommended monoclonal alternatives to Arc (E-19). Also, for AC, HRP, FITC, PE, Alexa Fluor[®] 488 and Alexa Fluor[®] 647 conjugates, see **Arc (C-7): sc-17839**.