

# Arc (40): sc-136278

## 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.

## REFERENCES

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- Montarolo, P.G., Goelet, P., Castellucci, V.F., Morgan, J., Kandel, E.R. and Schacher, S. 1986. A critical period for macromolecular synthesis in long-term heterosynaptic facilitation in *Aplysia*. *Science* 234: 1249-1254.
- Lau, L.F. and Nathans, D. 1991. Genes induced by serum growth factors. In *The Hormonal Control of Gene Transcription Vol. 6: Molecular Aspects*. Amsterdam: Elsevier Science Publishers, 257-293.
- Lyford, G.L., Yamagata, K., Kaufmann, W.E., Barnes, C.A., Sanders, L.K., Copeland, N.G., Gilbert, D.J., Jenkins, N.A., Lanahan, A.A. and Worley, P.F. 1995. Arc, a growth factor and activity-regulated gene, encodes a novel cytoskeleton-associated protein that is enriched in neuronal dendrites. *Neuron* 14: 433-435.
- Fosnaugh, J.S., Bhat, R.V., Yamagata, K., Worley, P.F. and Baraban, J.M. 1995. Activation of Arc, a putative "effector" immediate early gene, by cocaine in rat brain. *J. Neurochem.* 64: 2377-2380.

## CHROMOSOMAL LOCATION

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

## SOURCE

Arc (40) is a mouse monoclonal antibody raised against amino acids 264-385 of Arc of rat origin.

## PRODUCT

Each vial contains 50 µg IgG<sub>1</sub> in 0.5 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

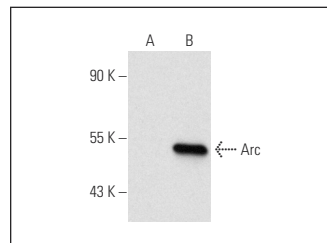
Arc (40) is recommended for detection of Arc of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

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.

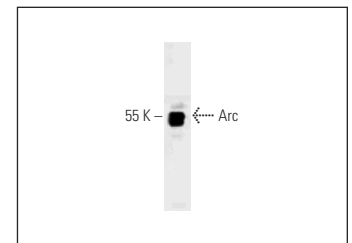
Molecular Weight of Arc: 55 kDa.

Positive Controls: rat brain extract: sc-2392, PC-12 cell lysate: sc-2250 or Arc (h): 293T Lysate: sc-117312.

## DATA



Arc (40): sc-136278. Western blot analysis of Arc expression in non-transfected: sc-117752 (A) and human Arc transfected: sc-117312 (B) 293T whole cell lysates.



Arc (40): sc-136278. Western blot analysis of Arc expression in rat cerebrum tissue extract.

## 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. Not for resale.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.



See **Arc (C-7): sc-17839** for Arc antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.