

# Arc (A-7): sc-166461

## 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.

## CHROMOSOMAL LOCATION

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

## SOURCE

Arc (A-7) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 365-396 at the C-terminus of 3BP2 of rat origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>2b</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-166461 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

Arc (A-7) is recommended for detection of Arc of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), 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) 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: Arc (h): 293T Lysate: sc-117312, mouse brain extract: sc-2253 or U-87 MG cell lysate: sc-2411.

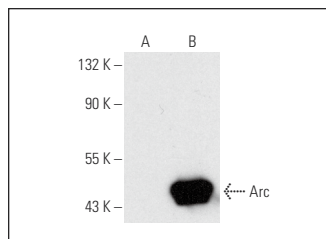
## STORAGE

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.

## DATA



Arc (A-7): sc-166461. Western blot analysis of Arc expression in non-transfected: sc-117752 (A) and human Arc transfected: sc-117312 (B) 293T whole cell lysates.

## SELECT PRODUCT CITATIONS

- Kádár, E., et al. 2016. Increase in c-Fos and Arc protein in retrosplenial cortex after memory-improving lateral hypothalamic electrical stimulation treatment. *Neurobiol. Learn. Mem.* 128: 117-124.
- Patton, M.S., et al. 2017. Ketamine corrects stress-induced cognitive dysfunction through JAK2/Stat3 signaling in the orbitofrontal cortex. *Neuropsychopharmacology* 42: 1220-1230.
- Kádár, E., et al. 2018. Arc protein expression after unilateral intracranial self-stimulation of the medial forebrain bundle is upregulated in specific nuclei of memory-related areas. *BMC Neurosci.* 19: 48.
- Huang, C.C.Y., et al. 2019. Deletion of Dtnbp1 in mice impairs threat memory consolidation and is associated with enhanced inhibitory drive in the amygdala. *Transl. Psychiatry* 9: 132.
- Sun, G.C., et al. 2021. Exercise prevents the impairment of learning and memory in prenatally phthalate-exposed male rats by improving the expression of plasticity-related proteins. *Behav. Brain Res.* 413: 113444.
- Bordet, G., et al. 2022. Poly(ADP-ribosyl)ating pathway regulates development from stem cell niche to longevity control. *Life Sci. Alliance* 5: e202101071.
- Lee, C.H., et al. 2022. Differential expression of miRNAs and their predicted target pathways in cochlear nucleus following chronic noise exposure in rats. *Cells* 11: 2266.
- Huguet, G., et al. 2023. Hippocampal neurogenesis and Arc expression are enhanced in high-fat fed prepubertal female pigs by a diet including ω-3 fatty acids and *Bifidobacterium breve* CECT8242. *Eur. J. Nutr.* 62: 2463-2473.



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.