SYSY Antibodies

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Arc

Cat.No. 156 005; Polyclonal Guinea pig antibody, 100 µl specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µl specific antibody, lyophilized. Affinity purified with the immunogen. For **reconstitution** add 100 µl H_2O. Then aliquot and store at -20°C to -80°C until use. For detailed information, see back of the data sheet.
Applications	**WB**: 1 : 1000 (AP-staining) **IP**: not tested yet **ICC**: 1 : 500 **IHC**: 1 : 500 **IHC-P**: not tested yet
Immunogen	Full-length recombinant mouse Arc (UniProt Id: Q9WV31)
Reactivity	Reacts with: rat (Q63053), mouse (Q9WV31). Other species not tested yet.
Specificity	Specific for arc. K.O. validated

TO BE USED IN VITRO / FOR RESEARCH ONLY
NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

Background

Immediate-early genes (IEGs) are rapidely induced after patterned synaptic activity. Genes that are involved in this complex response code for transcription and growth factors, metabolic and signaling enzymes, small GTP binding proteins and structural proteins. Some of these proteins may play a crucial role in long term plasticity which is important for learning processes.
The **a**ctivity **r**egulated **c**ytoskeleton associated protein **Arc** or **Arg 3.1** is enriched in dendrites and colocalizes with F-Actin. Direct interaction of Arc with actin has also been demonstrated by biochemical studies.

Selected References for 156 005

Class I Histone Deacetylase Inhibition by Tianeptinaline Modulates Neuroplasticity and Enhances Memory.
Zhao WN, Ghosh B, Tyler M, Lalonde J, Joseph NF, Kosaric N, Fass DM, Tsai LH, Mazitschek R, Haggarty SJ
ACS chemical neuroscience (2018) : . . **ICC; tested species: mouse**

BDNF and its pro-peptide are stored in presynaptic dense core vesicles in brain neurons.
Dieni S, Matsumoto T, Dekkers M, Rauskolb S, Ionescu MS, Deogracias R, Gundelfinger ED, Kojima M, Nestel S, Frotscher M, Barde YA, et al.
The Journal of cell biology (2012) 1966: 775-88. . **IHC**

Neuronal activity-related transcription is blunted in immature compared to mature dentate granule cells.
Parylak SL, Qiu F, Linker SB, Gallina IS, Lim CK, Preciado D, McDonald AH, Zhou X, Gage FH
Hippocampus (2023) 334: 412-423. . **IHC; tested species: mouse**

A novel environment-evoked transcriptional signature predicts reactivity in single dentate granule neurons.
Jaeger BN, Linker SB, Parylak SL, Barron JJ, Gallina IS, Saavedra CD, Fitzpatrick C, Lim CK, Schafer ST, Lacar B, Jessberger S, et al.
Nature communications (2018) 91: 3084. . **IHC; tested species: mouse**

Distinct synaptic and neurochemical changes to the granule cell-CA3 projection in Bassoon mutant mice.
Dieni S, Nestel S, Sibbe M, Frotscher M, Hellwig S
Frontiers in synaptic neuroscience (2015) 7: 18. . **IHC; tested species: mouse**

Immature doublecortin-positive hippocampal neurons are important for learning but not for remembering.
Vukovic J, Borlikova GG, Ruitenberg MJ, Robinson GJ, Sullivan RK, Walker TL, Bartlett PF
The Journal of neuroscience : the official journal of the Society for Neuroscience (2013) 3315: 6603-13. . **IHC; tested species: mouse**

Selected General References

Regulation of activity-regulated cytoskeleton protein (Arc) mRNA after acute and chronic electroconvulsive stimulation in the rat.
Larsen MH et al. Brain Res. (2005) PubMed:16309632

Memory-influencing intra-basolateral amygdala drug infusions modulate expression of Arc protein in the hippocampus.
McIntyre CK et al. Proc. Natl. Acad. Sci. U.S.A. (2005) PubMed:16020527

Sparse, environmentally selective expression of Arc RNA in the upper blade of the rodent fascia dentata by brief spatial experience.
Chawla MK et al. Hippocampus (2005) PubMed:15920719

Experience-dependent coincident expression of the effector immediate-early genes arc and Homer 1a in hippocampal and neocortical neuronal networks.
Vazdarjanova A et al. J. Neurosci. (2002) PubMed:12451105

Inhibition of activity-dependent arc protein expression in the rat hippocampus impairs the maintenance of long-term potentiation and the consolidation of long-term memory.
Guzowski JF et al. J. Neurosci. (2000) PubMed:10818134

Access the online factsheet including applicable protocols at https://sysy.com/product/156005 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All our antibodies and control proteins / peptides are shipped lyophilized (vacuum freeze-dried) and are stable in this form without loss of quality at ambient temperatures for several weeks.

Storage of Sealed Vials after Delivery

- **Unlabeled** and **biotin-labeled antibodies** and **control proteins** should be stored at 4°C before reconstitution. **They must not be stored in the freezer when still lyophilized!** Temperatures below zero may cause loss of performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long term storage (several months) may lead to aggregation.
- **Control peptides** should be kept at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- The storage freezer must not be of the frost-free variety ("no-frost freezer"). This cycle between freezing and thawing (to reduce frost-build-up), which is exactly what should be avoided. For the same reason, antibody vials should be placed in an area of the freezer that has minimal temperature fluctuations, for instance towards the back rather than on a door shelf.
- Aliquot the antibody and store frozen (-20°C to -80°C). Avoid very small aliquots (below 20 µl) and use the smallest storage vial or tube possible. The smaller the aliquot, the more the stock concentration is affected by evaporation and adsorption of the antibody to the surface of the storage vial or tube. Adsorption of the antibody to the surface leads to a substantial loss of activity.
- The addition of glycerol to a final concentration of 50% lowers the freezing point of your stock and keeps your antibody at -20°C in liquid state. This efficiently avoids freeze and thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C.

Monoclonal Antibodies

- **Ascites** and **hybridoma supernatant** should be stored at -20°C up to -80°C. **Prolonged storage at 4°C is not recommended!** Unlike serum, ascites may contain proteases that will degrade the antibodies.
- **Purified IgG** should be stored at -20°C up to -80°C. Adding a carrier protein like BSA will increase long term stability. Many of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Polyclonal Antibodies

- **Crude antisera**: With anti-microbials added, they may be stored at 4°C. However, frozen storage (-20°C up to -80°C) is preferable.
- **Affinity purified antibodies**: Less robust than antisera. Storage at -20°C up to -80°C is recommended. Adding a carrier protein like BSA will increase long term stability. Most of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Fluorescence-labeled Antibodies

- Store as a liquid with 1 : 1 (v/v) glycerol at -20°C. Protect these antibodies from light exposure.

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All our purified antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the amount of deionized water given in the respective datasheet. If higher volumes are preferred, add water as mentioned above and then the desired amount of PBS and a stabilizing carrier protein (e.g. BSA) to a final concentration of 2%. Some of our antibodies already contain albumin. Take this into account when adding more carrier protein.
  For complete reconstitution, carefully remove the lid. After adding water, briefly vortex the solution. You can spin down the liquid by placing the vial into a 50 ml centrifugation tube filled with paper.
- If desired, add small amounts of azide or thimerosal to prevent microbial growth. This is especially recommended if you want to keep an aliquot a 4°C.
- After reconstitution of fluorescence-labeled antibodies, add 1 : 1 (v/v) glycerol to a final concentration of 50%. This lowers the freezing point of your stock and keeps your antibody in liquid state at -20°C.
- Glycerol may also be added to unlabeled primary antibodies. It is a suitable way to avoid freeze-thaw cycles.
- Please refer to our **tips and hints for subsequent storage** of reconstituted antibodies and control peptides and proteins.