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. Antibodies should be stored at +4°C when still lyophilized. Do not freeze! 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 (FFPE)**: 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 rapidly 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

ARC/ARG3.1 binds the nuclear polyadenylate-binding protein RRM and regulates neuronal activity-dependent formation of nuclear speckles.
Kanhema T, Parobczak K, Patil S, Holm-Kaczmarek D, Hallin EI, Ludwiczak J, Szczepankiewicz AA, Pauzin FP, Mahboob A, Szum A, Ishizuka Y, et al.
Cell reports (2025) 444: 115525. . **WB, IHC; tested species: rat**

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**

Identification of an engram ensemble mediating memory forgetting in the dentate gyrus.
Hu S, Yang J, Yin S, Zhong Y, An Y, Guo Y, Zhai Z, Zhong Y
Neuron (2026) 1144: 759-773.e5. . **IHC; tested species: mouse**

Sevoflurane-induced disruption of critical period Arc signaling drives aberrant microglial synaptic pruning and cognitive deficits.
Chen BH, Chen YR, Zheng LY, Cai HJ, Ke XL, Li SY, Chen ZJ, Zhang XN, Zhou FQ, Chen G
Acta pharmacologica Sinica (2026) : . . **IHC; tested species: mouse**

Combinative Protein Expression of Immediate Early Genes c-Fos, Arc, and Npas4 Along Aversive and Appetitive Experience-Related Neural Networks.
Arai M, Osanai H, Snell CC, Gawf KE, Kitamura T, Ogawa SK
Hippocampus (2025) 355: e70030. . **IHC; tested species: mouse**

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**

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**

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

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 SYSY antibodies and control proteins/peptides are shipped lyophilized (vacuum freeze-dried). In this form, they remain stable 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. **Do not freeze lyophilized antibodies**. Temperatures below 0°C may impair performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long-term storage of lyophilized fluorophore-conjugates may cause aggregation.
- **Control peptides** should be stored at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- **Do not use frost-free ("no-frost") freezers.** These units periodically warm to remove ice buildup, causing freeze–thaw cycles that can damage antibodies.
- Store vials in areas with minimal temperature fluctuation - preferably toward the back of the freezer, not on the door.
- Aliquot reconstituted antibodies and store at –20°C to –80°C.
- Avoid very small aliquots (<20 µL), as evaporation and adsorption to tube surfaces can reduce antibody concentration and activity.
- Use the smallest practical storage vial to minimize surface area.
- Adding glycerol to a final concentration of 50% prevents freezing at -20°C, allowing storage in liquid form and effectively avoiding freeze–thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C

Monoclonal Antibodies

- **Ascites and hybridoma supernatant:** Store at -20°C to -80°C
  Prolonged storage at 4°C is not recommended, as proteases present in ascites may degrade antibodies.
- **Purified IgG:** Store at -20°C to -80°C
  Adding a carrier protein (e.g., BSA) enhances long-term stability.
  Many SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Polyclonal Antibodies

- **Crude antisera:** Can be stored at 4°C with antimicrobials added, but -20°C to -80°C is preferred
- **Affinity-purified antibodies:** Less stable than antisera; store at -20°C to -80°C
  Adding a carrier protein such as BSA improves long-term stability.
  Most SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Fluorescence-labeled Antibodies

- Store as a liquid with 1:1 (v/v) glycerol at -20°C, and protect from light exposure

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All purified SYSY antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the volume of deionized water specified in the corresponding datasheet. If a larger final volume is desired, first add the recommended amount of water, then adjust with PBS and, if needed, add a stabilizing carrier protein (e.g., BSA) to a final concentration of 2%. Some SYSY antibodies already contain albumin; please take this into account before adding additional carrier protein.

For complete reconstitution, carefully remove the vial cap. After adding water, briefly vortex the solution. To collect the liquid at the bottom of the vial, place the vial inside a 50 ml centrifuge tube padded with paper and centrifuge briefly.

- If desired, small amounts of azide or thimerosal may be added to prevent microbial growth. This is particularly recommended when storing an aliquot at 4°C.
- After reconstitution of fluorescence-labeled antibodies, add glycerol 1:1 (v/v) to achieve a final concentration of 50%. This prevents freezing at –20°C and keeps the antibody in liquid form, effectively avoiding freeze–thaw cycles.
- Glycerol may also be added to unlabeled primary antibodies as a general measure to prevent freeze–thaw damage.
- For further guidance, please refer to our **storage tips** and recommendations for reconstituted antibodies, control peptides, and control proteins.