

Arc

Cat.No. 156 003; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin and azide were added for stabilization. For reconstitution add 50 µl H ₂ O to get a 1mg/ml solution in PBS. 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 : 500 up to 1 : 2000 (AP staining) IP: yes ICC: 1 : 1000 IHC: 1 : 1000 IHC-P: 1 : 1000 ELISA: yes (see remarks)
Immunogen	Full-length recombinant mouse Arc (UniProt Id: Q9WV31)
Reactivity	Reacts with: rat (Q63053), mouse (Q9WV31). No signal: zebrafish. Other species not tested yet.
Specificity	Specific for arc. K.O. validated PubMed: 22539853
Remarks	ELISA: Suitable as detector antibody for sandwich-ELISA with cat. no. 156 011 as capture antibody.

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 activity regulated cytoskeleton 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 156 003

BDNF in Lower Brain Parts Modifies Auditory Fiber Activity to Gain Fidelity but Increases the Risk for Generation of Central Noise After Injury.
Chumak T, Rüttiger L, Lee SC, Campanelli D, Zuccotti A, Singer W, Popelář J, Gutsche K, Geisler HS, Schraven SP, Jaumann M, et al.
Molecular neurobiology (2016) 538: 5607-27. . **WB, IHC**

Synapse-specific changes in Arc and BDNF in rat hippocampus following chronic temporal lobe epilepsy.
Egbenya DL, Hussain S, Lai YC, Anderson AE, Davanger S
Neuroscience research (2022) : . . **WB, EM; tested species: rat**

Rapid translation of Arc/Arg3.1 selectively mediates mGluR-dependent LTD through persistent increases in AMPAR endocytosis rate.
Waung MW, Pfeiffer BE, Nosyreva ED, Ronesi JA, Huber KM
Neuron (2008) 591: 84-97. . **IHC, ICC; tested species: rat**

Activity-Regulated Cytoskeleton-Associated Protein Controls AMPAR Endocytosis through a Direct Interaction with Clathrin-Adaptor Protein 2.
DaSilva LL, Wall MJ, P de Almeida L, Wauters SC, Januário YC, Müller J, Corrêa SA
eNeuro () 33: . . **IP, WB**

Arc controls alcohol cue relapse by a central amygdala mechanism.
Pagano R, Salamian A, Zielinski J, Beroun A, Nalberczak-Skóra M, Skonieczna E, Cały A, Tay N, Banaschewski T, Desrivières S, Grigis A, et al.
Molecular psychiatry (2023) 282: 733-745. . **WB, IHC; KO verified; tested species: mouse**

Neuronal activity drives IGF2 expression from pericytes to form long-term memory.
Pandey K, Bessières B, Sheng SL, Taranda J, Osten P, Sandovici I, Constanica M, Alberini CM
Neuron (2023) 11123: 3819-3836.e8. . **WB, IHC; tested species: mouse**

Sex-dependent responsiveness of hippocampal neurons to sex neurosteroids: A role of Arc/Arg3.1.
Brökling J, Brunne B, Rune GM
Journal of neuroendocrinology (2022) : e13090. . **WB, ICC; tested species: rat**

Neuronal ensemble-specific DNA methylation strengthens engram stability.
Gulmez Karaca K, Kupke J, Brito DVC, Zeuch B, Thome C, Weichenhan D, Lutsik P, Plass C, Oliveira AMM
Nature communications (2020) 111: 639. . **WB, IHC; tested species: mouse**

Upf1 regulates neurite outgrowth and branching by transcriptional and post-transcriptional modulation of Arc.
Ryu HG, Seo JY, Jung Y, Kim SW, Kim E, Jang SK, Kim KT
Journal of cell science (2019) 1322: . . **WB, ICC; KD verified; tested species: mouse**

The Temporal Dynamics of Arc Expression Regulate Cognitive Flexibility.
Wall MJ, Collins DR, Chery SL, Allen ZD, Pastuzyn ED, George AJ, Nikolova VD, Moy SS, Philpot BD, Shepherd JD, Müller J, et al.
Neuron (2018) : . . **WB, ICC; tested species: mouse**

Evidence for a fragile X mental retardation protein-mediated translational switch in metabotropic glutamate receptor-triggered Arc translation and long-term depression.
Niere F, Wilkerson JR, Huber KM
The Journal of neuroscience : the official journal of the Society for Neuroscience (2012) 3217: 5924-36. . **WB, ICC; KO verified; tested species: mouse**

Access the online factsheet including applicable protocols at <https://sysy.com/product/156003> 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.