

Arc

Cat.No. 156 004; Polyclonal Guinea pig antibody, 100 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µl antiserum, lyophilized. For reconstitution add 100 µl H ₂ O, then aliquot and store at -20°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 recommended ICC: not tested yet IHC: 1 : 500 IHC_P: 1 : 500 up to 1 : 1000
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.
Remarks	This antibody is an alternative for the discontinued purified antibody cat. no. 156 005.

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

Access the online factsheet including applicable protocols at <https://sysy.com/product/156004> or scan the QR-code.



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 156 004

- Granule Cell Ensembles in Mouse Dentate Gyrus Rapidly Upregulate the Plasticity-Related Protein Synaptopodin after Exploration Behavior.
Paul MH, Choi M, Schlaudraff J, Deller T, Del Turco D
Cerebral cortex (New York, N.Y. : 1991) (2019) : . . **IHC, EM; tested species: mouse**
- Molecular Mechanisms Underlying the Retrieval and Extinction of Morphine Withdrawal-Associated Memories in the Basolateral Amygdala and Dentate Gyrus.
Franco-García A, Fernández-Gómez FJ, Gómez-Murcia V, Hidalgo JM, Milanés MV, Núñez C
Biomedicines (2022) 103: . . **IHC; tested species: rat**
- Atypical hypnotic compound ML297 restores sleep architecture immediately following emotionally-valenced learning, to promote memory consolidation and hippocampal network activation during recall.
Martínez JD, Brancalione WP, Peterson KG, Wilson LG, Aton SJ
Sleep (2022) : . . **IHC; tested species: mouse**
- Characterization of the neurogenic niche in the aging dentate gyrus using iterative immunofluorescence imaging.
Cole JD, Sarabia Del Castillo J, Gut G, Gonzalez-Bohorquez D, Pelkmans L, Jessberger S
eLife (2022) 11: . . **IHC; tested species: mouse**
- Sleep loss drives acetylcholine- and somatostatin interneuron-mediated gating of hippocampal activity to inhibit memory consolidation.
Delorme J, Wang L, Kuhn FR, Kodoth V, Ma J, Martínez JD, Raven F, Toth BA, Balendran V, Vega Medina A, Jiang S, et al.
Proceedings of the National Academy of Sciences of the United States of America (2021) 11832: . . **IHC; tested species: mouse**
- Functionally Distinct Neuronal Ensembles within the Memory Engram.
Sun X, Bernstein MJ, Meng M, Rao S, Sørensen AT, Yao L, Zhang X, Anikeeva PO, Lin Y
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- Variability in nicotine conditioned place preference, stress-induced reinstatement, and effects of guanfacine in male and female mice.
Lee AM, Calarco CA, McKee SA, Mineur YS, Picciotto MR
Genes, brain, and behavior (2019) : e12601. . **IHC; tested species: mouse**
- Sleep loss disrupts Arc expression in dentate gyrus neurons.
Delorme JE, Kodoth V, Aton SJ
Neurobiology of learning and memory (2018) : . . **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, Olesen M, Woldbye DP, Hay-Schmidt A, Hansen HH, Rønn LC, Mikkelsen JD
Brain research (2005) 10641-2: 161-5. .
- Memory-influencing intra-basolateral amygdala drug infusions modulate expression of Arc protein in the hippocampus.
McIntyre CK, Miyashita T, Setlow B, Marjon KD, Steward O, Guzowski JF, McGaugh JL
Proceedings of the National Academy of Sciences of the United States of America (2005) 10230: 10718-23. .
- Sparse, environmentally selective expression of Arc RNA in the upper blade of the rodent fascia dentata by brief spatial experience.
Chawla MK, Guzowski JF, Ramírez-Amaya V, Lipa P, Hoffman KL, Marriott LK, Worley PF, McNaughton BL, Barnes CA
Hippocampus (2005) 155: 579-86. .
- Experience-dependent coincident expression of the effector immediate-early genes arc and Homer 1a in hippocampal and neocortical neuronal networks.
Vazdarjanova A, McNaughton BL, Barnes CA, Worley PF, Guzowski JF
The Journal of neuroscience : the official journal of the Society for Neuroscience (2002) 2223: 10067-71. .

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 at 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.