

MLC-2A

Cat.No. 311 011AT647N; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified IgG, lyophilized, fluorescence-labeled with ATTO® 647N. Albumin and azide were added for stabilization. For reconstitution add 100 µl H ₂ O to get a 1mg/ml solution in PBS. Either add 1:1 (v/v) glycerol, then aliquot and store at -20°C until use, or store aliquots at -80°C without additives. Reconstitute immediately upon receipt! Avoid bright light when working with the antibody to minimize photo bleaching of the fluorescent dye. For detailed information, see back of the data sheet.
Applications	WB: N/A IP: N/A ICC: yes (see remarks) IHC: yes IHC_P: 1 : 200
Label	ATTO 647N
Clone	56F5
Subtype	IgG2b (κ light chain)
Immunogen	Full-length recombinant human MLC-2A (UniProt Id: Q01449)
Reactivity	Reacts with: human (Q01449), rat, mouse (Q9QVP4). No signal: chicken. Other species not tested yet.
Specificity	Specific for MLC-2A, no cross-reactivity to MLC-2V.
Matching control	311-0P
Remarks	ICC: Methanol fixation gives stronger signals.

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

Background

During cardiogenesis two major isoforms of **myosin light chain 2** are co-expressed in a tightly regulated manner. **MLC-2A** is only present in the atrium while MLC-2V is exclusively expressed in the ventricle. Knock out studies revealed that the 2A isoform cannot substitute for the 2V variant in the ventricular chamber.

Recently it has been demonstrated that embryonic and adult stem cells can be differentiated into cardiomyocytes which may generate suitable replacements for damaged heart tissue in the future. This monoclonal antibody is a useful tool to distinguish between ventricle and atrium specific cardiomyocytes.

Selected References for 311 011AT647N

Ascorbic acid induces MLC2v protein expression and promotes ventricular-like cardiomyocyte subtype in human induced pluripotent stem cells derived cardiomyocytes.

Gao Y, Su L, Wei Y, Tan S, Hu Z, Tao Z, Kovalik JP, Soong TW, Zhang J, Pu J, Ye L, et al. *Theranostics* (2023) 1311: 3872-3896. . **ICC, FACS; tested species: human**

Selected General References

Mechanism of spontaneous excitability in human embryonic stem cell derived cardiomyocytes. Satin J, Kehat I, Caspi O, Huber I, Arbel G, Itzhaki I, Magyar J, Schroder EA, Perlman I, Gepstein L. *The Journal of physiology* (2004) 559Pt 2: 479-96. .

Selection of ventricular-like cardiomyocytes from ES cells in vitro.

Müller M, Fleischmann BK, Selbert S, Ji GJ, Endl E, Middeler G, Müller OJ, Schlenke P, Frese S, Wobus AM, Hescheler J, et al. *FASEB journal : official publication of the Federation of American Societies for Experimental Biology* (2000) 1415: 2540-8. .

Transgenic remodeling of the contractile apparatus in the mammalian heart.

Palermo J, Gulick J, Colbert M, Fewell J, Robbins J. *Circulation research* (1996) 783: 504-9. .

Access the online factsheet including applicable protocols at <https://sysy.com/product/311011AT647N> 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.