SYSY Antibodies

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MLC-2V

Cat.No. 310 111; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified IgG, lyophilized. Albumin and azide were added for stabilization. For **reconstitution** add 100 µl H_2O 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 : 1000 up to 1 : 10000 (ECL detection) **IP**: yes **ICC**: external data (see remarks) **IHC**: 1 : 500 (see remarks) **IHC-P (FFPE)**: 1 : 200 up to 1 : 1000 **FACS**: external data (see remarks)
Clone	330G5
Subtype	IgG2a (κ light chain)
Immunogen	Full-length recombinant human MLC-2V protein (UniProt Id: P10916)
Epitop	AA 105 to 111 from human MLC-2V (UniProt Id: P10916)
Reactivity	Reacts with: human (P10916), rat (P08733), mouse (P51667), pig, chicken. Other species not tested yet.
Specificity	Specific for MLC-2V, no cross-reactivity to MLC-2A.
Remarks	**ICC**: This antibody has been successfully applied and published for this method by customers (see application-specific references). It has not been validated using our standard protocols. **IHC**: Antigen retrieval with citrate buffer pH 6 is tolerated. **FACS**: This antibody has been successfully applied and published for this method by customers (see application-specific references). This antibody has been successfully applied and published for this method by customers (see application-specific references). It has not been validated using our standard protocols.

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

Background

During cardiogenesis two major isoforms of **m**yosin **l**ight **c**hain **2** are co-expressed in a tightly regulated manner. **MLC-2V** is only present in the ventricle while MLC-2A is exclusively expressed in the atrium. 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. These antibodies are useful tools to distinguish between ventricle and atrium specific cardiomyocytes.

Selected References for 310 111

Transformation of the Nonprocessive Fast Skeletal Myosin II into a Processive Motor.
Amrute-Nayak M, Nayak A, Steffen W, Tsiavaliaris G, Scholz T, Brenner B
Small (Weinheim an der Bergstrasse, Germany) (2019) : e1804313. . **IP**

Differential Expression Levels of Integrin α6 Enable the Selective Identification and Isolation of Atrial and Ventricular Cardiomyocytes.
Wiencierz AM, Kernbach M, Ecklebe J, Monnerat G, Tomiuk S, Raulf A, Christalla P, Malan D, Hesse M, Bosio A, Fleischmann BK, et al.
PloS one (2015) 1011: e0143538. . **FACS**

Dantrolene rescues arrhythmogenic RYR2 defect in a patient-specific stem cell model of catecholaminergic polymorphic ventricular tachycardia.
Jung CB, Moretti A, Mederos y Schnitzler M, Iop L, Storch U, Bellin M, Dorn T, Ruppenthal S, Pfeiffer S, Goedel A, Dirschinger RJ, et al.
EMBO molecular medicine (2012) 43: 180-91. . **ICC; tested species: human**

p38 MAPK-dependent small HSP27 and αB-crystallin phosphorylation in regulation of myocardial function following cardioplegic arrest.
Clements RT, Feng J, Cordeiro B, Bianchi C, Sellke FW
American journal of physiology. Heart and circulatory physiology (2011) 3005: H1669-77. . **IHC-P; tested species: rat**

Guided cardiopoiesis enhances therapeutic benefit of bone marrow human mesenchymal stem cells in chronic myocardial infarction.
Behfar A, Yamada S, Crespo-Diaz R, Nesbitt JJ, Rowe LA, Perez-Terzic C, Gaussin V, Homsy C, Bartunek J, Terzic A
Journal of the American College of Cardiology (2010) 569: 721-34. . **IHC**

Creatine uptake in mouse hearts with genetically altered creatine levels.
ten Hove M, Makinen K, Sebag-Montefiore L, Hunyor I, Fischer A, Wallis J, Isbrandt D, Lygate C, Neubauer S
Journal of molecular and cellular cardiology (2008) 453: 453-9. . **WB**

Human iPSC cardiomyocyte patch transplantation modifies extracellular matrix and fibroblast behavior after myocardial infarction.
Torigata K, Matsuura R, Nagatomo F, Thiha M, Hikita T, Iseoka H, Takagi H, Koshimizu U, Sakakima H, Izumi S, Hatano A, et al.
iScience (2026) 294: 115341. . **IHC; tested species: human**

Recapitulation of dyssynchrony-associated contractile impairment in asymmetrically paced engineered heart tissue.
Stenzig J, Lemoine MD, Stoter AMS, Wrona KM, Lemme M, Mulla W, Etzion Y, Eschenhagen T, Hirt MN
Journal of molecular and cellular cardiology (2022) 163: 97-105. . **IHC; tested species: human**

Hypertrophic signaling compensates for contractile and metabolic consequences of DNA methyltransferase 3A loss in human cardiomyocytes.
Madsen A, Krause J, Höppner G, Hirt MN, Tan WLW, Lim I, Hansen A, Nikolaev VO, Foo RSY, Eschenhagen T, Stenzig J, et al.
Journal of molecular and cellular cardiology (2021) 154: 115-123. . **IHC; tested species: human**

Cardiotoxicity assessment using 3D vascularized cardiac tissue consisting of human iPSC-derived cardiomyocytes and fibroblasts.
Tadano K, Miyagawa S, Takeda M, Tsukamoto Y, Kazusa K, Takamatsu K, Akashi M, Sawa Y
Molecular therapy. Methods & clinical development (2021) 22: 338-349. . **IHC-P; tested species: human**

Access the online factsheet including applicable protocols at https://sysy.com/product/310111 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.