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**: 1 : 500 **IHC**: not tested yet **IHC-P**: 1 : 200 up to 1 : 1000
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**: The following fixatives are possible: methanol, 4% formaldehyde/PFA

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**

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**

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**

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**

Effects of the Delta Opioid Receptor Agonist DADLE in a Novel Hypoxia-Reoxygenation Model on Human and Rat-Engineered Heart Tissue: A Pilot Study.
Funcke S, Werner TR, Hein M, Ulmer BM, Hansen A, Eschenhagen T, Hirt MN
Biomolecules (2020) 109: . . **IHC; tested species: rat**

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 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.