abcam

ab240018

Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR4207(2)
Purification technique	Affinity purification Protein A
Specificity	LAMP2A is highly expressed in placenta, lung and liver, less in kidney and pancreas, low in brain and skeletal muscle (PMID: 10212251PubMed:7488019, PubMed:26856698). For better using it in tissue with low expression level, we suggest optimizing experimental protocols (increasing lysate amount, using lower dilution or higher sensitivity ECL substrate).
Concentration	0.974 - 1.079 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Rat, Mouse, Human
Dilution info	-
Notes	-

IP

Tested

Species	Mouse, Human
Dilution info	-
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

WB

Tested

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

Expected

Species	Rat, Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	We recommend permeabilisation with 0.1% Tween-20, 5 min.

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information LAMP2

Function

Lysosomal membrane glycoprotein which plays an important role in lysosome biogenesis, lysosomal pH regulation and autophagy (PubMed:11082038, PubMed:18644871, PubMed:24880125, PubMed:27628032, PubMed:36586411, PubMed:37390818, PubMed:8662539). Acts as an important regulator of lysosomal lumen pH regulation by acting as a direct inhibitor of the proton channel TMEM175, facilitating lysosomal acidification for optimal hydrolase activity (PubMed:37390818). Plays an important role in chaperone-mediated autophagy, a process that mediates lysosomal degradation of proteins in response to various stresses and as part of the normal turnover of proteins with a long biological half-live (PubMed:11082038, PubMed:18644871, PubMed:24880125, PubMed:27628032, PubMed:36586411, PubMed:8662539). Functions by binding target proteins, such as GAPDH, GPX4, NLRP3 and MLLT11, and targeting them for lysosomal degradation (PubMed:11082038, PubMed:18644871, PubMed:24880125, PubMed:36586411, PubMed:8662539). In the chaperone-mediated autophagy, acts downstream of chaperones, such as HSPA8/HSC70, which recognize and bind substrate proteins and mediate their recruitment to lysosomes, where target proteins bind LAMP2 (PubMed:36586411). Plays a role in lysosomal protein degradation in response to starvation (By similarity). Required for the fusion of autophagosomes with lysosomes during autophagy (PubMed:27628032). Cells that lack LAMP2 express normal levels of VAMP8, but fail to accumulate STX17 on autophagosomes, which is the most likely explanation for the lack of fusion

between autophagosomes and lysosomes (PubMed:27628032). Required for normal degradation of the contents of autophagosomes (PubMed:27628032). Required for efficient MHC class II-mediated presentation of exogenous antigens via its function in lysosomal protein degradation; antigenic peptides generated by proteases in the endosomal/lysosomal compartment are captured by nascent MHC II subunits (PubMed:15894275, PubMed:20518820). Is not required for efficient MHC class II-mediated presentation of endogenous antigens (PubMed:20518820). Isoform LAMP-2C. Modulates chaperone-mediated autophagy. Decreases presentation of endogenous antigens by MHCII. Does not play a role in the presentation of exogenous and membrane-derived antigens by MHCII. (Microbial infection) Supports the FURIN-mediated cleavage of mumps virus fusion protein F by interacting with both FURIN and the unprocessed form but not the processed form of the viral protein F.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab240018 is the carrier-free version of ab125068.

Patented technology

Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?

This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Conjugation ready

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	LAMP2A also known as lysosome-associated membrane protein 2A functions as a lysosomal marker and plays a role in the lysosome size and structure regulation. Its molecular weight is approximately 45 kDa. This protein is expressed mainly in tissues with high metabolic activity such as liver kidney and heart. LAMP2A is an integral component of the lysosomal membrane and is important for the proper function and maintenance of lysosomes which are cellular organelles involved in the degradation and recycling of macromolecules.
Biological function summary	LAMP2A facilitates chaperone-mediated autophagy (CMA) a specific mechanism for the selective degradation of proteins. It is not part of a larger complex but rather acts independently within the lysosomal membrane. This transport functions through recognizing cytosolic proteins containing a KFERQ-like motif which are then translocated into the lysosome for degradation. LAMP2A upholds cellular homeostasis and is important in adapting to cellular stress by facilitating the turnover of damaged or unnecessary proteins.
Pathways	LAMP2A is intimately involved in the CMA pathway. This pathway is important for regulating protein quality control often linked with other autophagic processes. LAMP2A also interacts with the heat shock cognate protein (HSC70) which assists in unfolding and transporting substrate proteins to lysosomes. Through these interactions LAMP2A helps maintain cellular proteostasis which is essential for cellular function and survival especially during stress conditions.
Associated diseases and disorders	LAMP2A is connected to lysosomal storage disorders such as Danon disease. This disease is characterized by the accumulation of autophagic vacuoles due to defects in lysosomal function. LAMP2A mutations alter lysosomal degradation capabilities leading to severe cardiomyopathy and myopathy. Additionally LAMP2A has implications in neurodegenerative diseases like Parkinson's disease due to its role in protein degradation pathways. In these contexts malfunction or altered expression of LAMP2A can disrupt cellular clearance processes contributing to pathogenesis along with proteins such as alpha-synuclein.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

We do not recommend this combination. It is not covered by our product promise.

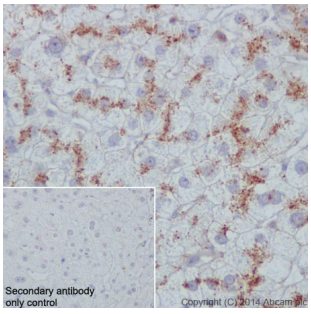
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

---

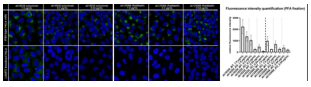
14 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

LAMP2A Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-LAMP2A antibody

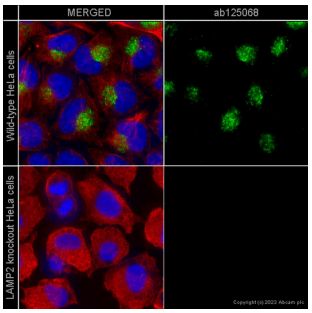
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human liver tissue labelling LAMP2A with purified ab125068 at 1/200. Heat mediated antigen retrieval was performed using Tris/EDTA buffer pH 9. ab97051, a HRP-conjugated goat anti-rabbit IgG (H+L) was used as the secondary antibody (1/500). Negative control using PBS instead of primary antibody. Counterstained with hematoxylin.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).



Immunocytochemistry/ Immunofluorescence - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

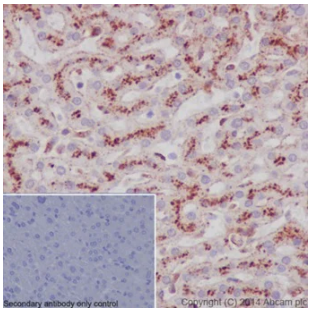
This data was developed using ab125068, the same antibody clone in a different buffer formulation. Side-by-side comparison of ICC performance using the rabbit polyclonal ab18528 and RabMab® ab125068. Staining was performed on wild-type HeLa cells (top panel) and LAMP2 knockout HeLa cells (bottom panel, available as ab255402). The cells were fixed with 4% PFA (10 min), permeabilized with 0.1% Tween-20 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with ab18528 or ab125068 overnight at +4°C at 3 different concentrations: 1.0 µg/mL, 0.2 µg/mL and 0.04 µg/mL. Secondary antibody incubation was at room temperature for 1h with a goat secondary antibody to Rabbit IgG (Alexa Fluor® 488) (ab150081) (shown in green) at 1/1000 and nuclear DNA was labelled with DAPI (shown in blue). Images were acquired with a high-content analyser (Operetta CLS, Perkin Elmer) and a maximum intensity projection of confocal sections is shown. Some cytoplasmic cross-reactivity is seen using ab18528 at 1.0 µg/mL, but further titration of the antibody improves the ICC staining result. The RabMab® ab125068 shows negligiblenon-specific staining across the dilution range. Quantification of the antibody signal was performed using a

minimum of 135 cells and data are presented as mean ± SD.Optimal dilutions/concentrations may vary across different cell types/experiment conditions and should be determined by the end user.



Immunocytochemistry/ Immunofluorescence - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

ab125068 staining LAMP2a in wild-type HeLa cells (top panel) and LAMP2 knockout HeLa cells (bottom panel, available as ab255402). The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% Tween-20 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with ab125068 at 0.04 µg/mL and ab7291 at 1 µg/mL overnight at +4°C, followed by a further incubation at room temperature for 1h with a goat secondary antibody to Rabbit IgG (Alexa Fluor® 488) (ab150081) (shown in green) and goat secondary antibody to Mouse IgG (Alexa Fluor® 594) (ab150120) (shown in red) both at 1/1000. Nuclear DNA was labelled with DAPI (shown in blue). In our hands, permeabilization with 0.1% Triton X-100 (5 min) resulted in greatly reduced signal and we recommend using 0.1% Tween-20 (5 min) for detecting this target. Image was acquired with a high-content analyser (Operetta CLS, Perkin Elmer) and a maximum intensity projection of confocal sections is shown. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).



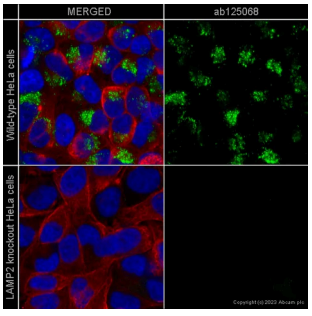
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

LAMP2A Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-LAMP2A antibody

Immunohistochemical analysis of paraffin-embedded Human liver labeling LAMP2A with unpurified ab125068 at 1/500 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasmic and membrane staining on human liver tissue is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).

Perform heat mediated antigen retrieval before commencing with IHC staining protocol.

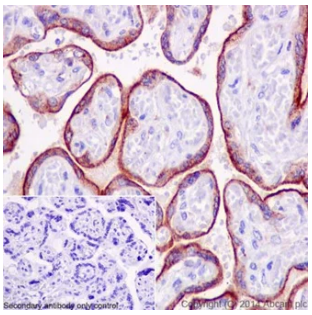


Immunocytochemistry/ Immunofluorescence - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

ab125068 staining LAMP2a in wild-type HeLa cells (top panel) and LAMP2 knockout HeLa cells (bottom panel, available as ab255402). The cells were fixed with 4% formaldehyde (10min), permeabilized with 0.1% Tween-20 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with ab125068 at 0.04 µg/mL and ab7291 at 1 µg/mL overnight at +4°C, followed by a further incubation at room temperature for 1h with a goat secondary antibody to Rabbit IgG (Alexa Fluor® 488) (ab150081) (shown in green) and goat secondary antibody to Mouse IgG (Alexa Fluor® 594) (ab150120) (shown in red) both at 1/1000. Nuclear DNA was labelled with DAPI (shown in blue).
In our hands, permeabilization with 0.1% Triton X-100 (5 min) resulted in greatly reduced signal and we recommend using 0.1% Tween-20 (5 min) for detecting this target.

Image was acquired with a high-content analyser (Operetta CLS, Perkin Elmer) and a maximum intensity projection of confocal sections is shown.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).



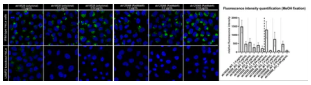
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

LAMP2A Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-LAMP2A antibody

Immunohistochemical analysis of paraffin-embedded Human placenta labeling LAMP2A with unpurified ab125068 at 1/500 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasmic and membrane staining on human placenta tissue is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

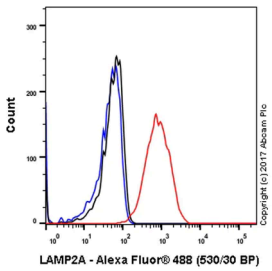
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).

Perform heat mediated antigen retrieval before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

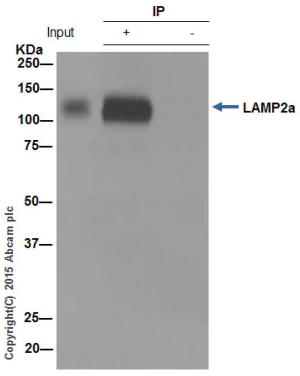
This data was developed using ab125068, the same antibody clone in a different buffer formulation. Side-by-side comparison of ICC performance using the rabbit polyclonal ab18528 and RabMab® ab125068. Staining was performed on wild-type HeLa cells (top panel) and LAMP2 knockout HeLa cells (bottom panel, available as ab255402). The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% Tween-20 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with ab18528 or ab125068 overnight at +4°C at 3 different concentrations: 1.0 µg/mL, 0.2 µg/mL and 0.04 µg/mL. Secondary antibody incubation was at room temperature for 1h with a goat secondary antibody to Rabbit IgG (Alexa Fluor® 488) (ab150081) (shown in green) at 1/1000 and nuclear DNA was labelled with DAPI (shown in blue). Images were acquired with a high-content analyser (Operetta CLS, Perkin Elmer) and a maximum intensity projection of confocal sections is shown. Some cytoplasmic cross-reactivity is seen using ab18528 at 1.0 µg/mL, but further titration of the antibody improves the ICC staining result. The RabMab® ab125068 shows negligible non-specific staining across the dilution range. Quantification of the antibody signal was performed using a minimum of 180 cells and data are presented as mean ± SD.Optimal dilutions/concentrations may vary across different cell types/experiment conditions and should be determined by the end user.



Flow Cytometry (Intracellular) - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

LAMP2A Flow Cytometry (Intracellular) staining using rabbit Anti-LAMP2A antibody

Intracellular Flow Cytometry analysis of HeLa (human cervix adenocarcinoma) cells labeling LAMP2A (red) with ab125068 at a 1/1000 dilution. Cells were fixed with 4% paraformaldehyde and permeabilized with 90% methanol. A goat anti-rabbit IgG (Alexa Fluor® 488) (ab150077) was used as the secondary antibody at a 1/2000 dilution. Black - Rabbit monoclonal IgG (ab172730). Blue (unlabeled control) - Cells without incubation with the primary and secondary antibodies.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).



Immunoprecipitation - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

ab125068 (purified) at 1/60 immunoprecipitating LAMP2A in HeLa whole cell lysate.
Lane 1 (input): HeLa whole cell lysate (10µg)

Lane 2 (+): ab125068 + HeLa whole cell lysate (10µg).

Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab125068 in HeLa whole cell lysate.

For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/1500 dilution.

Blocking buffer and concentration: 5% NFDM/TBST.

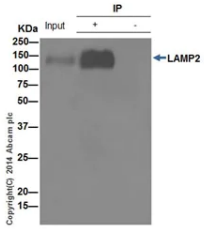
Diluting buffer and concentration: 5% NFDM /TBST.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).

All lanes:
Immunoprecipitation - Anti-LAMP2A antibody [EPR4207(2)] - Lysosome Marker (ab125068)

Predicted band size: 45 kDa

Observed band size: 120 kDa



Immunoprecipitation - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

LAMP2A was immunoprecipitated from 1mg of HeLa (Human epithelial cells from cervix adenocarcinoma) whole cell lysate with unpurified ab125068 at 1/100 dilution. Western blot was performed from the immunoprecipitate using ab125068 at 1/2000 dilution. Anti-Rabbit IgG (HRP), specific to the non-reduced form of IgG was used as secondary antibody at 1/1500 dilution.
Lane 1: HeLa whole cell lysate 10ug (Input).

Lane 2: ab125068 IP in HeLa whole cell lysate.

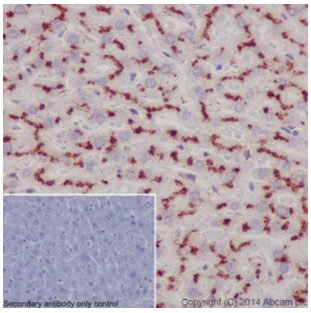
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab125068 in HeLa whole cell lysate.

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).
All lanes:
Immunoprecipitation - Anti-LAMP2A antibody [EPR4207(2)] - Lysosome Marker (ab125068)

Predicted band size: 45 kDa

Observed band size: 120 kDa



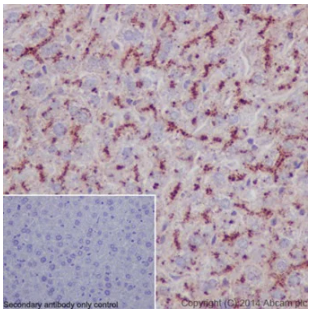
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

LAMP2A Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-LAMP2A antibody

Immunohistochemical analysis of paraffin-embedded Rat liver labeling LAMP2A with unpurified ab125068 at 1/500 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasmic and membrane staining on rat liver tissue is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).

Perform heat mediated antigen retrieval before commencing with IHC staining protocol.



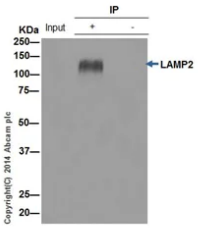
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

LAMP2A Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-LAMP2A antibody

Immunohistochemical analysis of paraffin-embedded Mouse liver labeling LAMP2A with unpurified ab125068 at 1/500 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasmic and membrane staining on mouse liver tissue is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).

Perform heat mediated antigen retrieval before commencing with IHC staining protocol.



Immunoprecipitation - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

LAMP2A was immunoprecipitated from 1mg of RAW 264.7 (Mouse macrophage cells transformed with Abelson murine leukemia virus) whole cell lysate with ab125068 at 1/100 dilution. Western blot was performed from the immunoprecipitate using unpurified ab125068 at 1/2000 dilution. Anti-Rabbit IgG (HRP), specific to the non-reduced form of IgG was used as secondary antibody at 1/1500 dilution.
Lane 1: RAW 264.7 whole cell lysate 10ug (Input).

Lane 2: ab125068 IP in RAW 264.7 whole cell lysate.

Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab125068 in RAW 264.7 whole cell lysate.

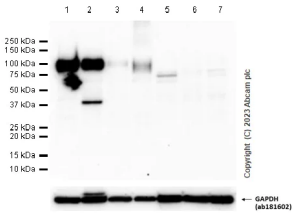
Blocking and dilution buffer and concentration: 5% NFDM/TBST.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068).

All lanes:
Immunoprecipitation - Anti-LAMP2A antibody [EPR4207(2)] - Lysosome Marker (ab125068)

Predicted band size: 45 kDa

Observed band size: 120 kDa



Western blot - Anti-LAMP2A antibody [EPR4207(2)] - BSA and Azide free (ab240018)

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab125068). Blocking and diluting buffer and concentration: 5% NFDM /TBST. ab181602 was used as a GAPDH loading control. LAMP2A is highly expressed in placenta, lung and liver, less in kidney and pancreas, low in brain and skeletal muscle (PMID: 10212251PubMed:7488019, PubMed:26856698). For better using it in tissue with low expression level, we suggest optimizing experimental protocols (increasing lysate amount, using lower dilution or higher sensitivity ECL substrate).
All lanes:
Western blot - Anti-LAMP2A antibody [EPR4207(2)] - Lysosome Marker (ab125068) at 1/1000 dilution

All lanes:
Western blot at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 45 kDa

Observed band size: 100 kDa

Exposure time: 40s

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.