abcam

ab13524

Anti-LAMP2 antibody [GL2A7] - Lysosome Marker

Anti-LAMP2 antibody [GL2A7] (ab13524) is a rat monoclonal antibody detecting LAMP2 in **Western Blot, Flow Cytometry, IP, IHC-P, IHC-Fr, ICC/IF**. Suitable for **Human, Mouse, Rabbit**.

- Over 200 publications
- Trusted since 2004

Lab Essentials

Key facts

Isotype	IgG
Host species	Rat
Storage buffer	Preservative: 0.09% Sodium azide Constituents: PBS, 50% Glycerol (glycerin, glycerine)
Form	Liquid
Clonality	Monoclonal
Immunogen	Tissue preparation containing Lamp2 protein. The exact immunogen used to generate this antibody is proprietary information. Database link P17047
Clone number	GL2A7
Purification technique	Affinity purification Protein G
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC

Expected

Species	Mouse
Dilution info	-
Notes	Fix cells with methanol or with paraformaldehyde-lysine-periodate formulation. If the latter is used, permeabilize with saponin, not with Triton X-100 or NP-40. The antibody will label the presumptive lysosomes and late endosomes in cells that have been permeabilized with saponin 0.01%.

Species	Human
Dilution info	-
Notes	Fix cells with methanol or with paraformaldehyde-lysine-periodate formulation. If the latter is used, permeabilize with saponin, not with Triton X-100 or NP-40. The antibody will label the presumptive lysosomes and late endosomes in cells that have been permeabilized with saponin 0.01%.

Species	Rabbit
Dilution info	-
Notes	Fix cells with methanol or with paraformaldehyde-lysine-periodate formulation. If the latter is used, permeabilize with saponin, not with Triton X-100 or NP-40. The antibody will label the presumptive lysosomes and late endosomes in cells that have been permeabilized with saponin 0.01%.

IP

Expected

Species	Mouse
Dilution info	-
Notes	(PMID 2142158).

Species	Human
Dilution info	-
Notes	(PMID 2142158).

Species	Rabbit
Dilution info	-
Notes	(PMID 2142158).

Flow Cyt

Expected

Species	Mouse
Dilution info	-
Notes	ab37371 - Rat polyclonal IgG, is suitable for use as an isotype control with this antibody.

Species	Human
Dilution info	-
Notes	ab37371 - Rat polyclonal IgG, is suitable for use as an isotype control with this antibody.

Species	Rabbit
Dilution info	-
Notes	ab37371 - Rat polyclonal IgG, is suitable for use as an isotype control with this antibody.

WB

Tested

Species	Mouse
Dilution info	1/500
Notes	-

Species	Human
Dilution info	1/500
Notes	-

Predicted

Species	Rabbit
Dilution info	-
Notes	-

IHC-FoFr

Expected

Species	Mouse
Dilution info	-
Notes	(PubMed:17425404)

Species	Human
Dilution info	-
Notes	(PubMed:17425404)

Species	Rabbit
Dilution info	-
Notes	(PubMed:17425404)

IHC-P

Expected

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

ICC/IF

Expected

Species	Mouse
Dilution info	-
Notes	See Abreview.

Species	Human
Dilution info	-
Notes	See Abreview.

Species	Rabbit
Dilution info	-
Notes	See Abreview.

IHC-Fr

Expected

Species	Mouse, Human, Rabbit
Dilution info	Use at an assay dependent concentration.
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 duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Product Specifications

Anti-LAMP2 antibody [GL2A7] (ab13524) is a rat monoclonal antibody and is validated for use in Flow Cyt, ICC, ICC/IF, IHC-FoFr, IHC-Fr, IHC-P, IP, WB in human, mouse, rabbit samples.
Anti-LAMP2 antibody [GL2A7] (ab13524) specifically detects LAMP2 (UniProt ID: P13473; Molecular weight: 42kDa) and is sold in 100 µL selling sizes.

Quality and Validation

Abcam's high quality validation processes ensure Anti-LAMP2 antibody [GL2A7] (ab13524) has high sensitivity and specificity.
Anti-LAMP2 antibody [GL2A7] (ab13524) has been cited over 207 times in peer reviewed journals and is trusted by the scientific community.
Anti-LAMP2 antibody [GL2A7] (ab13524) has 9 independent reviews from customers.

For maximum product recovery, after thawing, centrifuge the product vial before removing cap.

Supplementary info

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

Activity summary	LAMP2 also known as CD107b is an important protein found in the lysosomal membrane. It plays a significant role in lysosome function facilitating autophagy and the degradation of cellular debris. LAMP2 proteins are expressed in most tissues especially in tissues with high lysosomal activity like the liver kidney and heart. The LAMP2 molecule has a molecular weight of approximately 45 kDa. Researchers frequently use LAMP2 staining and LAMP2 marker to study its cellular localization and expression levels.
Biological function summary	LAMP2 is essential for the normal fusion of lysosomes with autophagosomes. This process ensures the recycling of cellular components and maintenance of cellular

	homeostasis. LAMP2 acts in conjunction with other members of the lysosome-associated membrane protein family LAMP1 and LAMP3 forming part of a larger complex. This interaction is fundamental in managing the degradation pathways within the cell supporting processes such as lipid metabolism and protein turnover.
Pathways	The activity of LAMP2 is critical in the autophagic and degradation pathways within the cell. It particularly interacts in the autophagy-lysosome pathway where it aids the clearance of damaged organelles and protein aggregates. LAMP2 interaction with proteins such as the autophagy-related protein LC3 helps this degradation process. Additionally LAMP2 plays a role in endocytic pathways linking it to proteins involved in vesicle trafficking and membrane fusion.
Associated diseases and disorders	Mutations or deficiencies in LAMP2 are associated with Danon disease a type of lysosomal storage disorder. Patients with Danon disease exhibit symptoms such as cardiomyopathy skeletal myopathy and intellectual disabilities. LAMP2 is also implicated in other lysosomal disorders with a connection to the malfunction of autophagy processes. Its dysfunction is often linked with proteins responsible for cellular degradation affecting the normal homeostatic balance and leading to the accumulation of autophagic substrates.

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

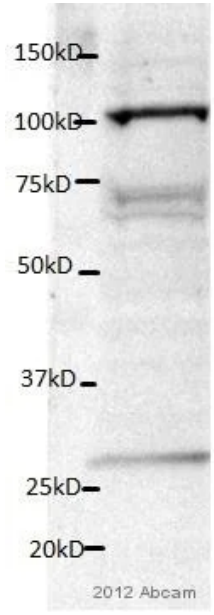
We do not recommend this combination. It is not covered by our product promise.

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.

8 product images



This image is courtesy of an anonymous customer review.

Western blot - Anti-LAMP2 antibody [GL2A7] - Lysosome Marker (ab13524)

LAMP2 Western blot staining of HEK293 cell lysate using rat Anti-LAMP2 antibody

Blocked with 5% milk for 1 hour at RT.
Incubated with primary antibody in 5% BSA/TBST for 16 hours at 4°C.

All lanes:
Western blot - Anti-LAMP2 antibody [GL2A7] - Lysosome Marker (ab13524) at 1/1000 dilution

All lanes:
HEK293 cell lysate at 20 µg

Secondary

All lanes:
Goat anti-rat HRP at 1/5000 dilution

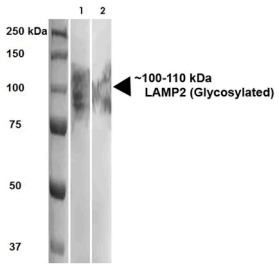
Developed using the ECL technique.

Performed under reducing conditions.

Predicted band size: 45 kDa

Observed band size: 105 kDa, 28 kDa, 70 kDa

Exposure time: 3min



Western blot - Anti-LAMP2 antibody [GL2A7] - Lysosome Marker (ab13524)

LAMP2 Western blot staining using rat Anti-LAMP2 antibody

Block: 5% milk + TBST for 1 hour at RT.
All lanes:
Western blot - Anti-LAMP2 antibody [GL2A7] - Lysosome Marker (ab13524) at 1/500 dilution

Lane 1:
HeLa (Human epithelial cell line from cervix adenocarcinoma) lysate at 20 µg

Lane 2:
NIH/3T3 (Mouse embryo fibroblast cell line) lysate at 10 µg

Secondary

All lanes:
HRP Goat Anti-Rat, 1 hour at RT at 1/100 dilution

Predicted band size: 45 kDa

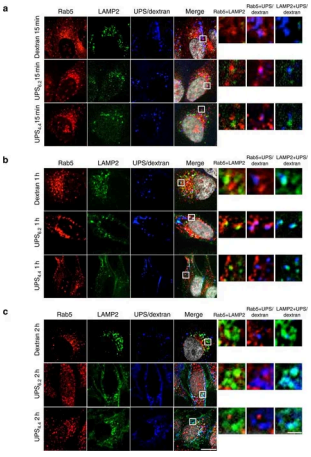


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Immunocytochemistry/ Immunofluorescence - Anti-LAMP2 antibody [GL2A7] - Lysosome Marker (ab13524)

LAMP2 Immunocytochemistry/ Immunofluorescence staining using rat Anti-LAMP2 antibody

Immunocytochemistry-immunofluorescence using Anti-LAMP2 antibody [GL2A7], ab13524. Publication image from Zhao, T. et al., 2015, Nat Commun, 26437053. Legend direct from paper.

Buffering the pH of endocytic organelles affects their membrane protein dynamics.HeLa cells were treated with 500 μg ml−1 dextran-TMR or 1,000 μg ml−1 UPS6.2-Cy5 or UPS4.4-Cy5 for 5 min for cell uptake. Then they were fixed after 15 min (a), 1 h (b) and 2 h (c). Immunofluorescence (IF) images show the localization of UPS nanoparticles in early endosomes (Rab5) or lysosomes (LAMP2). Scale bar, 10 and 5 μm (inset). Imaris software was used to analyse co-localization of z-stacked confocal images. The fraction of UPS/dextran co-localized with Rab5 (d) and LAMP2 (e) and the fraction of Rab5 co-localized with LAMP2 (f) were calculated from thresholded Mander's coefficient (see Supplementary Methods), n=10,α=0.05, ****P<0.0001. Two-way analysis of variance and Sidak's multiple comparison tests were performed to assess the statistical significance. The dashed line in (f) represents the basal level of Rab 5 and LAMP2 co-localization in HeLa cells without any treatment.

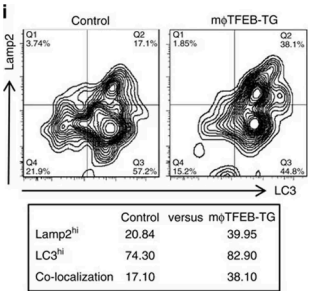


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Flow Cytometry - Anti-LAMP2 antibody [GL2A7] - Lysosome Marker (ab13524)

LAMP2 Flow Cytometry staining using rat Anti-LAMP2 antibody

Flow cytometry/Cell sorting using Anti-LAMP2 antibody [GL2A7], ab13524. Publication image from Weihl, C. C. et al., 2017, Nat Commun, 28589926. Legend direct from paper.

TFEB overexpression in macrophages induces the autophagy markers LC3 and p62 and restores their co-localization in atherosclerotic aortic roots.(a,b) Representative immunofluorescence images of atherosclerotic aortic roots (2 months' western diet) from control and mφTFEB-TG mice (ApoE-null background) stained with antibodies against TFEB (a), TFEB and MOMA-2 (b; scale bar, 50 μm). (c) Quantification of the average TFEB intensity and co-localization with nuclear marker DAPI (n=4-5 mice per group). (d) Representative immunofluorescence images of atherosclerotic aortic roots from control and mφTFEB-TG mice stained with p62 and LC3 (scale bar, 50 μm). (e) Quantification of the p62 and LC3 average intensity from control and mφTFEB-TG-stained roots (n=13–14 mice per group). (f) Representative pseudocolour image of these p62/LC3 images (green represents co-localization) and graph depicting the increased p62/LC3 correlation seen in a representative mφTFEB-TG as compared to a control lesion (scale bar, 50 μm). (g) Quantification of the p62/LC3 co-localization from control and mφTFEB-TG-stained roots shown (n=13–14 mice per group). (h,i) FACS analysis of aortic macrophages isolated from atherosclerotic aortas of Control or mφTFEB-TG mice (western diet-fed ApoE-KO background, n=3–4 pooled aortas) and stained for either (h) p62 and LC3, or (i) Lamp2 and LC3 antibodies (per cent of macrophages expressing each marker is shown below plots). For all graphs, data are presented as mean±s.e.m. *P<0.05, ***P<0.001, two-tailed unpaired t-test.

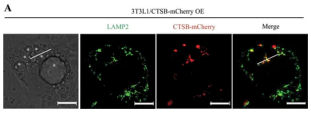


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Immunocytochemistry/ Immunofluorescence - Anti-LAMP2 antibody [GL2A7] - Lysosome Marker (ab13524)

LAMP2 Immunocytochemistry/ Immunofluorescence staining using rat Anti-LAMP2 antibody

LAMP2 Immunocytochemistry-immunofluorescence using Anti-LAMP2 antibody [GL2A7] ab13524. Publication image and figure legend from Mizunoe, Y., Kobayashi, M., et al., 2020, Sci Rep, Pubmed 31959889.

Localization of PLIN1 in CTSB-OE 3T3L1 adipocytes. (A and B) Immunofluorescence analysis was performed with anti-LAMP2 antibodies in CTSB-mCherry-OE 3T3L1 adipocytes. Images of CTSB-mCherry (red) and LAMP2 (green) (A), and histogram of fluorescence intensity (B) are shown. Representative images of individual experiments are shown. Scale bar represents 10 μm. Asterisk indicates LD. (C) CTSB-OE 3T3L1 adipocytes were treated with 10 μm CA074ME for 24 h. Immunofluorescence analysis was performed with anti-PLIN1 and LAMP2 antibodies. PLIN1 (green) and LAMP2 (red) are shown. Representative images of individual experiments are shown. Scale bar represents 5 μm. Arrows indicate the contact site between PLIN1 and LAMP2. (D) CTSB-mCherry-OE 3T3L1 adipocytes were treated with 10 μm CA074ME for 24 h. Immunofluorescence analysis was performed with an anti-PLIN1 antibody. PLIN1 (green) and CTSB-mCherry (red) are shown. Representative images of individual experiments are shown. Scale bar represents 5 μm. Arrows indicate the contact site between PLIN1 and CTSB-mCherry.

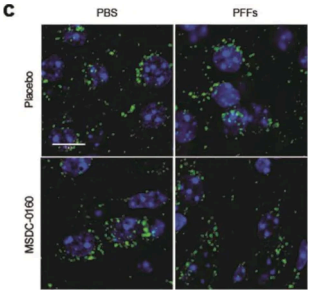


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Immunocytochemistry/ Immunofluorescence - Anti-LAMP2 antibody [GL2A7] - Lysosome Marker (ab13524)

LAMP2 Immunocytochemistry/ Immunofluorescence staining using rat Anti-LAMP2 antibody

LAMP2 immunocytochemistry/ immunofluorescence using Anti-LAMP2 antibody [GL2A7] ab13524. Publication image and figure legend from Peelaerts, W., Bergkvist, L., et al., 2020, Free Neuropathol, Pubmed 35224554.

Absence of inflammatory or autophagy deficits 13-weeks post PFF surgery.a) Representative images of Iba-1 positive staining in the ipsilateral AON, scale bar = 50 μm. b) Quantification of microglial hydraulic radius as a measure of microglial ramification and activation (n = 5-6/group, SEM), shows no microglial activation following PFF injection. c) Representative images of LAMP2 positive staining (green) in the ipsilateral AON. DAPI (blue) was used to visualize the cell nuclei. Scale bar = 10 μm d) Fluorescent LAMP2 quantification after adding adaptive triangle thresholding in the AON (n = 6, SEM)

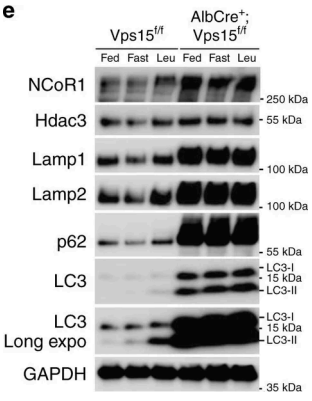


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Western blot - Anti-LAMP2 antibody [GL2A7] - Lysosome Marker (ab13524)

LAMP2 Western blot staining using rat Anti-LAMP2 antibody

Western Blotting using Anti-LAMP2 antibody [GL2A7], ab13524. Publication image from Iershov, A. et al., 2019, Nat Commun, 30952952. Legend direct from paper.

PPARα activation by fenofibrate restores lipid catabolism in Vps15-LKO mice. a Relative transcript levels of metabolic enzymes in ketogenesis, FAO, fatty acid transport and peroxisome biogenesis in livers of fed Vps15f/f and AlbCre+;Vps15f/f mice that were treated for two weeks with fenofibrate. Data are means ± SEM (Vps15f/f (n = 6 and n = 4 for chow and FENO group), AlbCre+;Vps15f/f (n = 5 and n = 4 for chow and FENO group), P < 0.05 *: vs Vps15f/f, #: vs chow, two-tailed, unpaired Student’ s t test). b Immunoblot analysis of total protein liver extracts of mice treated as in a using indicated antibodies. Densitometric analyses of protein levels normalised to Pras40 levels presented as folds over Vps15f/f-chow condition. Data are means ± SEM (n = 4 for Vps15f/f chow and FENO group, n = 3 for AlbCre+;Vps15f/f chow and n = 4 for AlbCre+;Vps15f/f FENO group, P < 0.05 *: vs Vps15f/f, #: vs chow, two-tailed, unpaired Student’ s t test). c Representative images of immunofluorescent analyses showing nuclear localization of PPARα, NCoR1 and Hdac3 in liver tissue of Vps15f/f and AlbCre+;Vps15f/f mice treated as in a. Secondary anti-mouse or anti-rabbit IgG Alexa Fluor 568 antibody were used for detection. Scale bar: 40 μm. d Relative levels of Acetyl-CoA and Acyl-carnitine metabolites measured by mass spectrometry in liver tissue of mice treated as in a. Data are means ± SEM (Vps15f/f (n = 4 for chow and FENO group), AlbCre+;Vps15f/f (n = 3 and n = 4 for chow and FENO group, P < 0.05 *: vs Vps15f/f, #: vs chow, two-tailed, unpaired Student’ s t test). e Immunoblot analyses in total protein liver extracts

of 6-week old Vps15f/f and AlbCre+;Vps15f/f mice. Mice were either fed or fasted for 24 h. Four hours prior the sacrifice fasted mice were injected with leupeptin (40 mg/kg) or vehicle. The total protein extracts were immunoblotted with indicated antibodies. f Immunoblot analysis of cytosolic protein fractions of primary hepatocytes that were grown for 72 h in fasting media and treated for 24 h before collection with increasing doses of BafA1. Densitometric analyses of protein levels normalised to Tubulin levels presented as folds over vehicle-treated cells. Data are means ± SEM (n = 4 with 100 nM Bafilomycin A1 treatment, P < 0.05 *: vs vehicle, two-tailed, unpaired Student’ s t test). g Relative transcript levels (left panel) of indicated genes in primary hepatocytes incubated in control or fasting media (72 h) treated with or without BafA1 for 24 h before collection. Data are means ± SEM (n = 3, P < 0.05 *: vs control media, #: vs fasting media, two-tailed, unpaired Student’ s t test). The immunoblot (right panel) served as control of autophagic activity

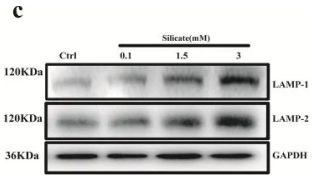


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Western blot - Anti-LAMP2 antibody [GL2A7] - Lysosome Marker (ab13524)

LAMP2 Western blot staining using rat Anti-LAMP2 antibody

LAMP2 western blotting using Anti-LAMP2 antibody [GL2A7] ab13524. Publication image and figure legend from Li, Z., Liu, S., et al., 2019,Stem Cell Res Ther, Pubmed 31775910.

High concentration of silicate did not affect lysosome function of BMSCs. a, b Lyso-tracker assay, which could lock acid lysosomes, was applied to evaluate the function of lysosomes, and the Baf A1 and CQ treatment groups were set as the positive control groups (n = 3, 30 random cells per sample). The data indicated that the fluorescence intensity in the silicate (3 mM)-treated groups was similar to that of the CQ-treated group, and the intensity increased significantly compared with that of the control group. c, d Western blot was performed to characterize the expression of LAMP1 and LAMP2 in BMSCs after exposure to silicate for 24 h (n = 4). Data analysis showed that LAMP1 and LAMP2 increased significantly in the high-concentration silicate group. (*p < 0.05, **p < 0.01, ***p < 0.001)

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