LC3B Antibody

NB100-2220

Unit Size: 0.1 ml

Aliquot and store at -20°C or -80°C. Avoid freeze-thaw cycles.

Reviews: 38  Publications: 710

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Updated 6/6/2018 v.20.1

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## Product Information

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Unit Size</td>
<td>0.1 ml</td>
</tr>
<tr>
<td>Concentration</td>
<td>1.0 mg/ml</td>
</tr>
<tr>
<td>Storage</td>
<td>Aliquot and store at -20C or -80C. Avoid freeze-thaw cycles.</td>
</tr>
<tr>
<td>Clonality</td>
<td>Polyclonal</td>
</tr>
<tr>
<td>Preservative</td>
<td>0.02% Sodium Azide</td>
</tr>
<tr>
<td>Isotype</td>
<td>IgG</td>
</tr>
<tr>
<td>Purity</td>
<td>Immunogen affinity purified</td>
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<tr>
<td>Buffer</td>
<td>PBS</td>
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### Product Description

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Host</td>
<td>Rabbit</td>
</tr>
<tr>
<td>Gene ID</td>
<td>81631</td>
</tr>
<tr>
<td>Gene Symbol</td>
<td>MAP1LC3B</td>
</tr>
<tr>
<td>Species</td>
<td>Human, Mouse, Rat, Porcine, Avian, Bacteria, Bovine, Canine, Primate, Golden Syrian Hamster, Zebrafish</td>
</tr>
<tr>
<td>Reactivity Notes</td>
<td>Bovine reactivity reported in scientific literature (PMID: 24895572). Primate reactivity reported in scientific literature (PMID: 25142602). Canine reactivity reported in scientific literature (PMID: 25839646). Avian reactivity reported in scientific literature (PMID: 29546310). The mouse detection has been reported to be weaker than the human. Immunogen sequence has 84% homology to Xenopus.</td>
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<tr>
<td>Marker</td>
<td>Autophagosome Marker</td>
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<tr>
<td>Immunogen</td>
<td>A synthetic peptide made to an N-terminal portion of the human LC3 protein sequence (between residues 1-100). [UniProt# Q9GZQ8]</td>
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### Product Application Details

<table>
<thead>
<tr>
<th>Feature</th>
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<tr>
<td>Applications</td>
<td>Western Blot, Simple Western, ELISA, Immunoblotting, Immunocytochemistry/Immunofluorescence, Immunohistochemistry, Immunohistochemistry-Frozen, Immunohistochemistry-Paraffin, Immunoprecipitation, Proximity Ligation Assay, Chromatin Immunoprecipitation (ChIP), Knockout Validated</td>
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<td>Recommended Dilutions</td>
<td>Western Blot, Simple Western 1:50, ELISA, Immunohistochemistry 1:200-1:400, Immunocytochemistry/Immunofluorescence 1:200, Immunoprecipitation 20ug/500ug of protein, Immunohistochemistry-Paraffin 1:200-1:400, Immunohistochemistry-Frozen, Immunoblotting, Proximity Ligation Assay, Chromatin Immunoprecipitation (ChIP), Knockout Validated</td>
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<tr>
<td>Application Notes</td>
<td>This LC3 antibody is tested for ICC/IF, IHC on paraffin embedded sections, IP and Western Blot. Use in IHC on frozen sections reported in scientific literature (PMID: 20008275). Use in immunoblotting reported in scientific literature (PMID 28559895). Use in ELISA reported in scientific literature (PMID 20503249). Use in ChIP reported in scientific literature (PMID28431247). In Western blot bands are seen ~17 and 19 kDa corresponding to LC3-II and LC3-I. In some cases a non-specific band is seen at ~21 kDa in mouse protein. In ICC/IF, cytoplasmic staining was observed in HeLa cells. Use in Proximity Ligation Assay reported in scientific literature (PMID 27219062). In Simple Western only 10 - 15 uL of the recommended dilution is used per data point.</td>
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</table>
Western Blot: LC3B Antibody [NB100-2220] - Macrophage lysates probed with anti-LC3 antibody. This image was submitted via customer Review.

Knockout Validated: LC3B Antibody [NB100-2220] - Western blot shows lysates of HeLa human cervical epithelial carcinoma parental cell line and LC3B knockout HeLa cell line (KO) untreated (-) or treated (+) with 50 uM Chloroquine for 18 hours. PVDF membrane was probed with 0.5 ug/mL of Rabbit Anti-LC3B Monoclonal Antibody (Catalog # NB100-2220) followed by HRP-conjugated Anti-Rabbit IgG Secondary Antibody (Catalog# HAF008). A specific band was detected for LC3B at approximately 15 kDa (as indicated) in the parental HeLa cell line, but is not detectable in the knockout HeLa cell line. GAPDH is shown as a loading control. This experiment was conducted under reducing conditions.


Western Blot: LC3B Antibody [NB100-2220] - LC3B/MAP1 [NB100-2220] - Western blot analysis of HeLa (1), HeLa + CQ (2), SHSY5Y (3), SHSY5Y +CQ (4), A431 (5), A431 +CQ (6) and Ntera2 (7) using LC3 antibody at 2 ug/ml.
Western Blot: LC3B Antibody [NB100-2220] - shows lysates of mouse NIH3T3 and rat PC-12 cell lines untreated (-) or treated (+) with Chloroquine. PVDF membrane was probed with 0.5 ug/mL rabbit anti-LC3B polyclonal Antibody (NB100-2220, Novus Biologicals), followed by 1:2000 dilution of goat anti-rabbit IgG secondary antibody.

Western Blot: LC3B Antibody [NB100-2220] - Analysis of LC3 in Huh-7 and SMMC-7721 cells using anti-LC3B antibody. Image from verified customer review.

Western Blot: LC3B Antibody [NB100-2220] - Analysis using the Biotin conjugate of NB100-2220. Image from verified customer review.

Immunocytochemistry/Immunofluorescence: LC3B Antibody [NB100-2220] - LC3B detected in immersion fixed HeLa human cervical epithelial carcinoma cell line treated with Chloroquine using 1ug/mL rabbit anti-LC3B polyclonal (NB100-2220, Novus Biologicals). Cells were stained using donkey anti-rabbit IgG-NL557 and counterstained with DAPI (blue).

Western Blot: LC3B Antibody [NB100-2220] - Detection in fibroblast whole cell extract. Image from verified customer review.

Immunocytochemistry/Immunofluorescence: LC3B Antibody [NB100-2220] - LC3 antibody was tested in HeLa cells with Dylight 488 (green). Nuclei and alpha-tubulin were counterstained with DAPI (blue) and Dylight 550 (red).

Immunohistochemistry: LC3B Antibody [NB100-2220] - Analysis using the Biotin conjugate of NB100-2220. Staining of brain, cerebral cortex, neurons with cell processes.
Western Blot: LC3B Antibody [NB100-2220] - Analysis of LC3 in H9C2 cells.


Western Blot: LC3B Antibody [NB100-2220] - Detection of LC3 in mouse HL-1 cell lysate. Photo courtesy of product review by verified customer.

Western Blot: LC3B Antibody [NB100-2220] - WB detection of LC3I and LC3II in mouse cochlea cell line SV-K1. Cells were treated with chloroquine (1uM), and As2O3 (1uM) for 24 hrs. This image was submitted via customer review.
Immunocytochemistry/Immunofluorescence: LC3B Antibody [NB100-2220] - HeLa cells were treated with 50uM CQ overnight, fixed for 10 minutes using 10% formalin and then permeabilized for 5 minutes using 1X PBS + 0.05% Triton-X100. The cells were incubated with anti-LC3B at 2 ug/ml overnight at 4C and detected with an anti-rabbit Dylight 488 (Green) at a 1:500 dilution. Alpha tubulin (DM1A) NB100-690 was used as a co-stain at a 1:1000 dilution and detected with an anti-mouse Dylight 550 (Red) at a 1:500 dilution. Nuclei were counterstained with DAPI (Blue). Cells were imaged using a 40X objective.

Immunocytochemistry/Immunofluorescence: LC3B Antibody [NB100-2220] - Untreated HeLa cells were fixed for 10 minutes using 10% formalin and then permeabilized for 5 minutes using 1X PBS + 0.05% Triton-X100. The cells were incubated with anti-LC3B at 2 ug/ml overnight at 4C and detected with an anti-rabbit Dylight 488 (Green) at a 1:500 dilution. Alpha tubulin (DM1A) NB100-690 was used as a co-stain at a 1:1000 dilution and detected with an anti-mouse Dylight 550 (Red) at a 1:500 dilution. Nuclei were counterstained with DAPI (Blue). Cells were imaged using a 40X objective.

Immunohistochemistry: LC3B Antibody [NB100-2220] - IHC of rat brain from confirmed customer review.

Immunohistochemistry-Paraffin: LC3B Antibody [NB100-2220] - IHC analysis of a formalin fixed and paraffin embedded tissue section of mouse brain using 1:200 dilution of rabbit anti-LC3 antibody. The specific signal of LC3 was detected using HRP-conjugated secondary antibody with DAB reagent, and nuclei of cells were counterstained using hematoxylin. This LC3 antibody generated a low to moderate levels of cytoplasmic staining in the glial cells. The neurons depicted a moderate to strong staining for LC3 in their cytoplasm.
Immunohistochemistry-Frozen: LC3B Antibody [NB100-2220] - LC3 accumulation in muscle fibers from patients with PAD (row B - E). Normal fibers from a Non-PAD sample (row A). Scale bar = 100 uM. This image was submitted via customer Review.

Simple Western: LC3B Antibody [NB100-2220] - Simple Western lane view shows a specific band for LC3 in 0.5 mg/ml of Neuro2A lysate. This experiment was performed under reducing conditions using the 12-230 kDa separation system.
<table>
<thead>
<tr>
<th>Publications</th>
</tr>
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<tbody>
<tr>
<td>Wu Z, Zhao J, Qiu M et al. CRISPR/Cas9 mediated GFP knock-in at the MAP1LC3B locus in 293FT cells is better for bona fide monitoring cellular autophagy. Biotechnol J Apr 19 2018 12:00AM [PMID: 29673078] (Human)</td>
</tr>
<tr>
<td>Coant N, Garcia-Barros M, Zhang Q et al. AKT as a key target for growth promoting functions of neutral ceramidase in colon cancer cells. Oncogene Apr 17 2018 12:00AM [PMID: 29662189] (Human)</td>
</tr>
<tr>
<td>Panda PK, Naik PP, Meher BR, Das DN. PUMA dependent mitophagy by Abrus agglutinin contributes to apoptosis through ceramide generation. Biochim Biophys Acta Jul 9 1905 12:00AM [PMID: 29229477] (Human)</td>
</tr>
<tr>
<td>FitzPatrick LM, Hawkins KE, Delhove JMKM et al. NF-kB Activity Initiates Human ESC-Derived Neural Progenitor Cell Differentiation by Inducing a Metabolic Maturation Program. Stem Cell Reports Apr 17 2018 12:00AM [PMID: 29681545] (WB, Human)</td>
</tr>
</tbody>
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More publications at [http://www.novusbio.com/NB100-2220](http://www.novusbio.com/NB100-2220)
Procedures

Western Blot Protocol protocol specific for LC3 Antibody (NB100-2220)
Protocol: Inhibition of Autophagy and LC3B Antibody (NB100-2220) Western Blot

Materials

- Chloroquine diphosphate (CQ) (10 mM) in dH2O
- 1X PBS Sample buffer, 2X Laemmli buffer: 4% SDS, 5% 2-mercaptoethanol (BME), 20% glycerol, 0.004% bromophenol blue, 0.125 M Tris HCl, pH 6.8
- RIPA buffer: 150 mM NaCl, 1% NP-40 or Triton X-100, 0.5% sodium deoxycholate, 0.1% SDS, 50 mM Tris-HCl, pH 8.0, 20 mM Tris-HCl, pH 7.5
- 1X Running Buffer: 25 mM Tris-base, 192 mM glycine, 0.1% SDS. Adjust to pH 8.3
- 1X Transfer buffer (wet): 25 mM Tris-base, 192 mM glycine, 20% methanol, Adjust to pH 8.3
- TBS
- TBST, TBS and 0.1% Tween
- Blocking solution: TBST, 5% non-fat dry milk
- rabbit anti-LC3 primary antibody (NB100-2220) in blocking buffer (~2 ug/mL)

Methods

Tip: For more information on Western Blotting, see our Western Blot handbook.

1. Grow cells (e.g. HeLa or Neuro2A) in vitro to semi-confluency (70-75%).

2. Add CQ to culture dishes to a final concentration of 50 uM and incubate overnight (16 hours). Remember to include an untreated sample as a negative control.
   Note: Validated autophagy inducers should be included as positive controls.

3. Rinse cells with ice-cold 1X PBS and lyse cells with sample buffer.
   Note: LC3-I and LC3-II are sensitive to degradation, although LC3-I is more labile. These proteins are sensitive to freeze-thaw cycles and SDS sample buffers. Fresh samples should be analyzed quickly to prevent protein degradation.

4. Sonicate and incubate cells for 5 minutes at 95°C.
   Tip: Cells are lysed directly in sample buffer or may be lysed in RIPA buffer.

5. Load samples of Chloroquine-treated and -untreated cell lysates 40 ug/lane on a 4-20% polyacrylamide gradient gel (SDS-PAGE).
   Tip: For detection of LC3 it is particularly important to monitor the progress of the gel as this protein is relatively small (~14kDa).
   Tip: Alternatively, for non-gradient gels, use a 20% polyacrylamide gel.

6. Transfer proteins to a 0.2 um PVDF membrane for 30 minutes at 100V.

7. After transfer, rinse the membrane with dH2O and stain with Ponceau S for 1-2 minutes to confirm efficiency of protein transfer.

8. Rinse the membrane in dH2O to remove excess stain and mark the loaded lanes and molecular weight markers using a pencil.

9. Block the membrane using blocking buffer solution (5% non-fat dry milk in TBST) for 1 hour at room temperature.

10. Rinse the membrane with TBST for 5 minutes.

11. Dilute the rabbit anti-LC3 primary antibody (NB100-2220) (~2 ug/mL) in blocking buffer and incubate the membrane for 1 hour at room temperature.

12. Rinse the membrane with dH2O.

13. Rinse the membrane with TBST, 3 times for 10 minutes each.

14. Incubate the membrane with diluted secondary antibody, according with product's specifications, (e.g. anti-rabbit-IgG HRP-conjugated) in blocking buffer for 1 hour at room temperature.
   Note: Tween-20 may be added to the blocking or antibody dilution buffer at a final concentration of 0.05-0.2%, provided it does not interfere with antibody-antigen binding.

15. Rinse the membrane with TBST, 3 times for 10 minutes each.

16. Apply the detection reagent of choice (e.g. BioFX Super Plus ECL) in accordance with the manufacturer's instructions.

17. Image the blot.
   Tip: LC3-I and its lipidated form LC3-II have different electrophoretic mobility properties, with the lipidated form moving faster in an SDS-PAGE gel, albeit its larger molecular weight. LC3-II runs at 14-16 kDa while LC3-I runs at 16-18kDa.

Note: This assay measures the difference in the LC3-II signal in the presence and absence of...
inhibitors (e.g., lysosomotropic agents). When autophagic flux is present or induced in a system an increase in the LC3-II signal should be observed with the inhibitor.

**Immunohistochemistry-Paraffin Protocol for LC3B/MAP1LC3B Antibody (NB100-2220)**

I. Deparaffinization:
A. Treat slides with Xylene: 3 changes for 5 minutes each. Drain slides for 10 seconds between changes.
B. Treat slides with 100% Reagent Alcohol: 3 changes for 5 minutes each. Drain slides for 10 seconds between changes.

II. Quench Endogenous Peroxidase:
To Prepare 200 ml of Quenching Solution: Hydrogen Peroxide to 200 ml of Methanol.
**Use within 4 hours of preparation**
A. Place slides in peroxidase quenching solution: 15-30 minutes.
B. Place slides in distilled water: 2 changes for 2 minutes each.

III. Retrieve Epitopes:
A. Preheat Citrate Buffer. Place 200 ml of Citrate Buffer Working Solution into container, cover and place into steamer. Heat to 90-96°C.
B. Place rack of slides into hot Citrate Buffer for 20 minutes. Cover.
C. Carefully remove container with slides from steamer and cool on bench, uncovered, for 20 minutes.
D. Slowly add distilled water to further cool for 5 minutes.
E. Rinse slides with distilled water. 2 changes for 2 minutes each.

IV. Immunostaining Procedure:
A. Remove each slide from rack and circle tissue section with a hydrophobic barrier pen (e.g. Liquid Blocker-Super Pap Pen).
B. Flood slide with Wash Solution.
C. Carefully remove container with slides from steamer and cool on bench, uncovered, for 20 minutes.
D. Drain wash solution, apply 2-3 drops of Non-Aqueous Mounting Media to each slide, and mount coverslip.

Notes:
- Use treated slides (e.g. HistoBond) to assure adherence of FFPE sections to slide.
- Prior to deparaffinization, heat slides overnight in a 60°C oven.
- All steps in which Xylene is used should be performed in a fume hood.
- For Epitope Retrieval, a microwave or pressure cooker may be substituted for the steamer method. Adjust times as necessary depending on conditions.
- For the initial IHC run with a new primary antibody, test tissues with and without Epitope Retrieval. In some instances, Epitope Retrieval may not be necessary. - 200 ul is the recommended maximum volume to apply to a slide for full coverage. Using more than 200 ul may allow solutions to wick off the slide and create drying artifacts. - For small tissue sections 2-3 ul may be used.
- 5 minutes of development with DAB Substrate should be sufficient. Do not develop for more than 10 minutes. If 5 minutes of development causes background staining, further dilution of the primary antibody may be necessary.
- Hematoxylin should produce a light nuclear counterstain so as not to obscure the DAB staining. Counterstain for 1-1.5 minutes for nuclear antigens. Counterstain for 2-3 minutes for cytoplasmic and membranous antigens. If darker counterstaining is desired increase time (up to 10 minutes).
Limitations
This product is for research use only and is not approved for use in humans or in clinical diagnosis. Primary Antibodies are guaranteed for 1 year from date of receipt.

For more information on our 100% guarantee, please visit www.novusbio.com/guarantee

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