Product Datasheet

MCT1/SLC16A1 Antibody - BSA Free
NBP1-59656

Unit Size: 0.1 mg

Store at 4C short term. Aliquot and store at -20C long term. Avoid freeze-thaw cycles.

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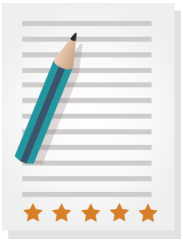


NBP1-59656

MCT1/SLC16A1 Antibody - BSA Free

Product Information

Unit Size	0.1 mg
Concentration	1.0 mg/ml
Storage	Store at 4C short term. Aliquot and store at -20C long term. Avoid freeze-thaw cycles.
Clonality	Polyclonal
Preservative	0.02% Sodium Azide
Isotype	IgG
Purity	Immunogen affinity purified
Buffer	PBS
Target Molecular Weight	54 kDa

Product Description

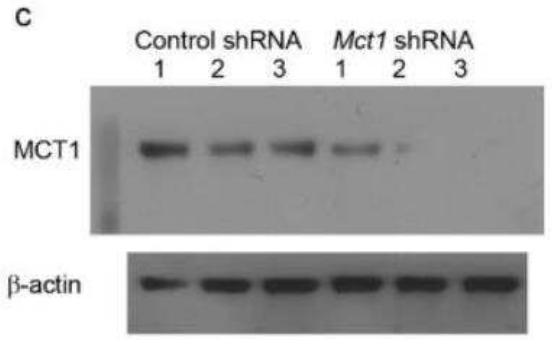
Host	Rabbit
Gene ID	6566
Gene Symbol	SLC16A1
Species	Human, Mouse
Immunogen	A synthetic peptide made to an internal portion of the human Monocarboxylic acid transporter 1 protein (between residues 200-300) [UniProt P53985]

Product Application Details

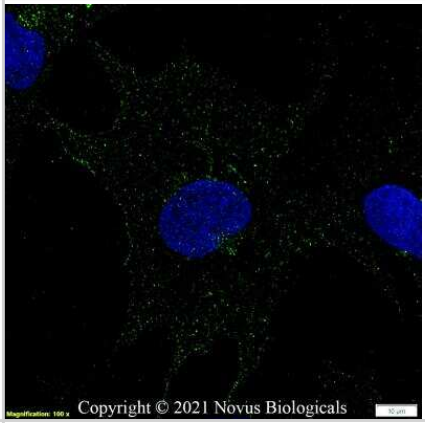
Applications	Western Blot, Immunocytochemistry/ Immunofluorescence, Immunohistochemistry, Immunohistochemistry-Paraffin, Knockdown Validated
Recommended Dilutions	Western Blot 2.5 ug/mL, Immunohistochemistry 1:200, Immunocytochemistry/ Immunofluorescence 1:100 - 1:250, Immunohistochemistry-Paraffin 1:200, Knockdown Validated
Application Notes	The observed molecular weight of the protein may vary from the listed predicted molecular weight due to post translational modifications, post translation cleavages, relative charges, and other experimental factors.

Images

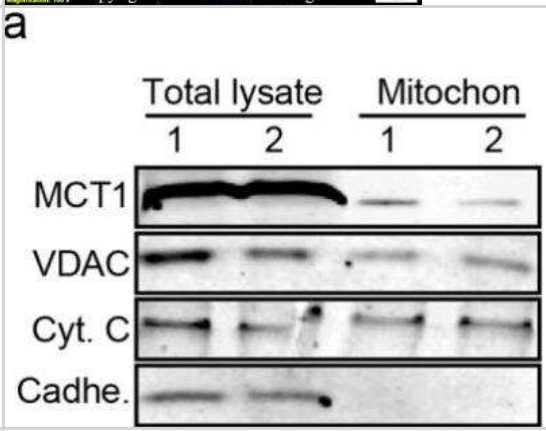
Knockdown Validated: MCT1/SLC16A1 Antibody [NBP1-59656] - Western blotting to show knockdown of the Mct1 gene in BAT injected with Mct1 shRNA. Image collected and cropped by CiteAb from the following publication (https://www.nature.com/articles/s41598-018-25265-3) licensed under a CC-BY license.



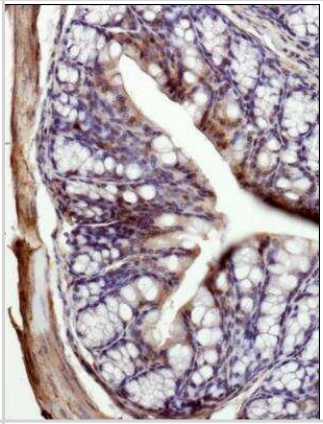
Immunocytochemistry/Immunofluorescence: MCT1/SLC16A1 Antibody [NBP1-59656] - Ntera2 cells were fixed in 4% paraformaldehyde for 10 minutes and permeabilized in 0.05% Triton X-100 in PBS for 5 minutes. The cells were incubated with anti-MCT1/SLC16A1 Antibody NBP1-59656 at 2 ug/ml overnight at 4C and detected with an anti-rabbit Dylight 488 (Green) at a 1:1000 dilution for 60 minutes. Nuclei were counterstained with DAPI (Blue). Cells were imaged using a 100X objective and digitally deconvolved.



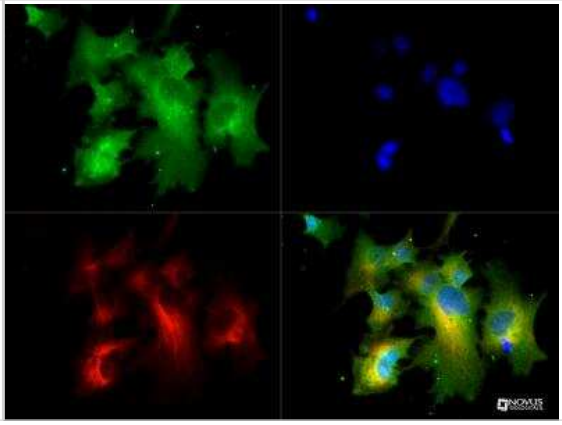
Western Blot: MCT1/SLC16A1 Antibody [NBP1-59656] - Blockade of MCT1 inhibits the effects of optogenetic stimulation of sympathetic efferent fibers of BAT. (a) Cropped images of western blotting showing expression of MCT1 in the mitochondrial fractions (n = 2 mice). Full-length blots are presented in Supplementary Figure 2. VDAC: voltage-dependent anion channel, Cyt. C: cytochrome C, Cadhe: Cadherin. Image collected and cropped by CiteAb from the following publication (https://www.nature.com/articles/s41598-018-25265-3) licensed under a CC-BY license.



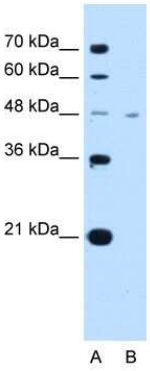
Immunohistochemistry-Paraffin: MCT1/SLC16A1 Antibody [NBP1-59656] - Staining with Monocarboxylic acid transporter 1 antibody. Strong staining of lumen and crypt cells was observed with weaker cytoplasmic staining observed in the submucosa of mouse intestine.



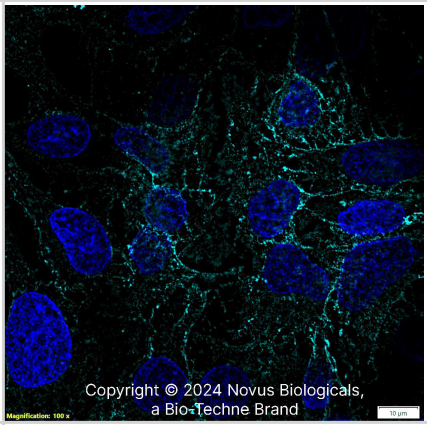
Immunocytochemistry/Immunofluorescence: MCT1/SLC16A1 Antibody [NBP1-59656] - Monocarboxylic acid transporter 1 antibody was tested in HeLa cells with DyLight488 (green). Nuclei and alpha-tubulin were counterstained with DAPI (blue) and Dylight 550 (red). General cytoplasmic and membrane staining was observed.



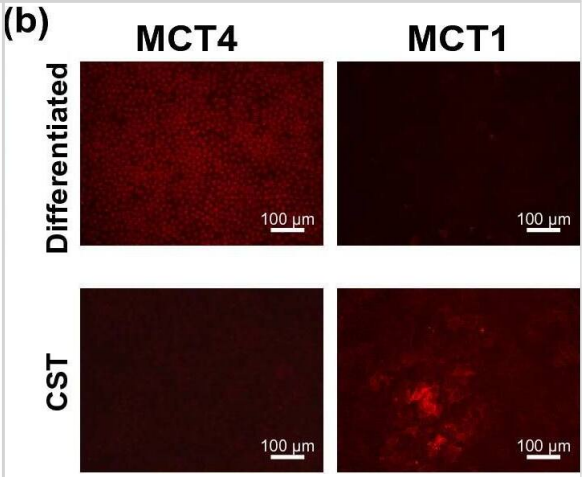
Western Blot: MCT1/SLC16A1 Antibody [NBP1-59656] - Monocarboxylic acid transporter 1 Antibody [NBP1-59656] - Jurkat cell lysate, concentration 2.5 ug/mL.



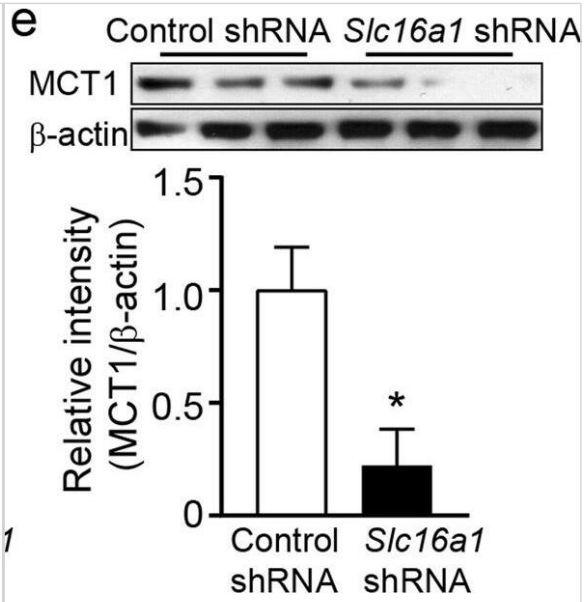
MCT1/SLC16A1 was detected in immersion fixed HepG2 human hepatocellular carcinoma cell line using Rabbit anti- MCT1/SLC16A1 Affinity Purified Polyclonal Antibody conjugated to Alexa Fluor® 647 (Catalog # NBP1-59656AF647) (light blue) at 10 µg/mL overnight at 4C. Cells were counterstained with DAPI (dark blue). Cells were imaged using a 100X objective and digitally deconvolved.



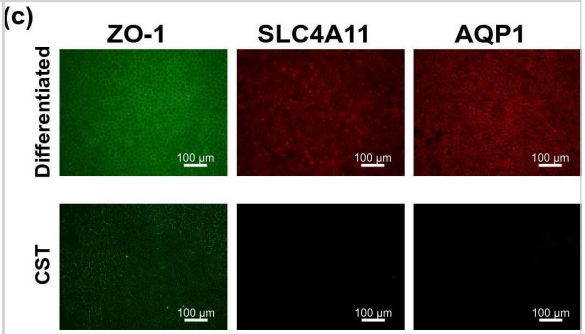
Immunocytochemistry/ Immunofluorescence: MCT1/SLC16A1 Antibody - BSA Free [NBP1-59656] - Immunofluorescence detection of ion transporters & water transporters in differentiated & CST- SPs. Na+/K+-ATP isoform ATP1A1, water transporter Aquaporin 1, SLC4A11, Bicarbonate transporter NBCe1, Na+-H+ exchanger NHE1 & ZO-1 as an endothelial barrier to complements fluid transport, were all selectively expressed in differentiated SPs, but were almost null in the cell-state-transitioned SPs. Monocarboxylic acid transporter 4 (MCT4) was expressed in the former, but not in the latter SPs, whereas the isomer MCT1 was selectively expressed in the latter SPs, but not in the former SPs. Differentiated SPs were obtained from the same donor (two eyes, right & left mixed) & were incubated in the presence of 10-µM Y27632 (differentiated SPs, CD44-/ + proportion: 86.7%). CST-SPs were obtained from the separate donor (two eyes, right & left mixed) & were incubated in the presence of 10-µM Y27632 + 1-µM SB431542 (SB4) + 10-µM SB203580 (SB2) + 5-ng/mL epidermal growth factor (EGF). The differentiated SPs were fixed at 37 days of the second passage, & the CST SPs were fixed at 38 days of the second passage. Bars: 100 µm. Experiments were repeated four times. Image collected & cropped by CiteAb from the following publication (https://pubmed.ncbi.nlm.nih.gov/35428816), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



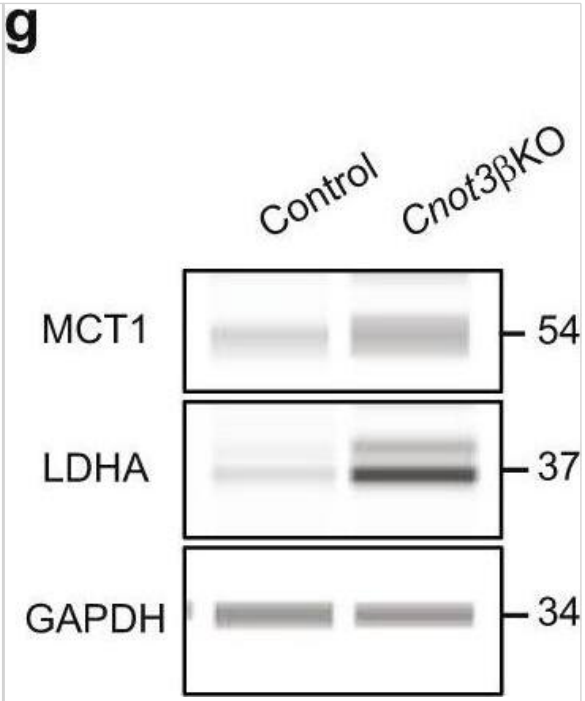
Western Blot: MCT1/SLC16A1 Antibody - BSA Free [NBP1-59656] - Blockade of MCT1 inhibits the effects of optogenetic stimulation of sympathetic efferent fibers of BAT. (a) Cropped images of western blotting showing expression of MCT1 in the mitochondrial fractions (n = 2 mice). Full-length blots are presented in Supplementary Figure 2. VDAC: voltage-dependent anion channel, Cyt. C: cytochrome C, Cadhe: Cadherin (b) Pooled data from 6 mice showing changes in Slc16a1 (Mct1) mRNA expression with (filled square) & without (open circle) stimulation of sympathetic innervation of BAT (***p < 0.001, unpaired t-test). Data are shown as mean ± SEM. (c) Pooled data showing effects of blockade of the MCT1 on optogenetically induced increase in body temperature & glucose uptake (n = 5 mice). Data are shown as mean ± SEM. (d) Plot showing relative Slc16a1 (Mct1) mRNA expression in mice injected with control or Slc16a1 shRNA into BAT (n = 6 mice, ***p < 0.001, unpaired t-test). Data are shown as mean ± SEM. (e) Western blotting to show knockdown of the Mct1 gene in BAT injected with Mct1 shRNA. Cropped images of western blotting showing knockdown of MCT1 protein (upper panel). Plot showing relative expression of MCT1 protein (bottom panel, *p < 0.05, unpaired t-test). Data are shown as mean ± SEM. (f) Pooled data showing that mice injected with Slc16a1 (Mct1) shRNA into the BAT pad showed no response to optogenetic stimulation. Data are shown as mean ± SEM. Image collected & cropped by CiteAb from the following publication (https://www.nature.com/articles/s41598-018-25265-3), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



Immunocytochemistry/ Immunofluorescence: MCT1/SLC16A1 Antibody - BSA Free [NBP1-59656] - Immunofluorescence detection of ion transporters & water transporters in differentiated & CST- SPs. Na+/K+-ATP isoform ATP1A1, water transporter Aquaporin 1, SLC4A11, Bicarbonate transporter NBCe1, Na+-H+ exchanger NHE1 & ZO-1 as an endothelial barrier to complements fluid transport, were all selectively expressed in differentiated SPs, but were almost null in the cell-state-transitioned SPs. Monocarboxylic acid transporter 4 (MCT4) was expressed in the former, but not in the latter SPs, whereas the isomer MCT1 was selectively expressed in the latter SPs, but not in the former SPs. Differentiated SPs were obtained from the same donor (two eyes, right & left mixed) & were incubated in the presence of 10-μM Y27632 (differentiated SPs, CD44-/ + proportion: 86.7%). CST-SPs were obtained from the separate donor (two eyes, right & left mixed) & were incubated in the presence of 10-μM Y27632 + 1-μM SB431542 (SB4) + 10-μM SB203580 (SB2) + 5-ng/mL epidermal growth factor (EGF). The differentiated SPs were fixed at 37 days of the second passage, & the CST SPs were fixed at 38 days of the second passage. Bars: 100 μm. Experiments were repeated four times. Image collected & cropped by CiteAb from the following publication (https://pubmed.ncbi.nlm.nih.gov/35428816), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



Simple Western: MCT1/SLC16A1 Antibody - BSA Free [NBP1-59656] - CNOT3 is essential for β-cell maturation & identity.a qPCR analysis of progenitor cells/dedifferentiation markers, normalized to the Gapdh mRNA level, in control & Cnot3βKO islets (n = 4–6). b Immunoblot analysis of ALDH1A3 in islet lysates from 8-week-old control & Cnot3βKO mice. This blot is a representative of three different blots. c Band quantification of an immunoblot of ALDH1A3 (n = 3) in Fig. 4b. d qPCR analysis of β-cell-specific functional mRNAs expression categorized as β-cell-specific transcription factors, glycolytic pathway, insulin granule maturation, & insulin secretion mRNAs, normalized to the Gapdh mRNA level, in control & Cnot3βKO islets (n = 3–7). e Co-immunofluorescence staining of MAFA (green), GLUT2 (green), & insulin (magenta) in pancreatic sections from 8-week-old control & Cnot3βKO mice. A scale bar represents 25 μm. Representative results from four 8-week-old mice from each genotype are shown. f qPCR analysis of immature β-cell markers, normalized to the Gapdh mRNA level, in control & Cnot3βKO islets (n = 5–7). g Immunoblot analysis of MCT1 & LDHA in islet lysates from 8-week-old control & Cnot3βKO mice. This blot is a representative of three different blots. h Band quantification of immunoblot of MCT1 & LDHA (n = 3). Data are presented as mean ± SEM; *P < 0.05; **P < 0.01; ***P < 0.001, two-tailed Student's t test. Image collected & cropped by CiteAb from the following publication (https://pubmed.ncbi.nlm.nih.gov/32859966), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



Publications

Jason D Yang, Daniel Mott, Rujapak Sutiwisesak, Yu-Jung Lu, Fiona Raso, Britni Stowell, Greg Hunter Babunovic, Jinhee Lee, Steve M Carpenter, Sing Sing Way, Sarah M Fortune, Samuel M Behar Mycobacterium tuberculosis-specific CD4+ and CD8+ T cells differ in their capacity to recognize infected macrophages. PLoS pathogens 2018-07-06 [PMID: 29782535]

Chaumeil M, Guglielmetti C, Qiao K et al. Hyperpolarized (13)C metabolic imaging detects long-lasting metabolic alterations following mild repetitive traumatic brain injury Research Square 2023-08-15 [PMID: 37645937]

Hiltz RL, McCurdy DE, Moreland S et al. Effects of weaning on regulators of volatile fatty acid absorption and intracellular pH in Holstein calves JDS Communications 2021-11-01 [PMID: 36337096] (Immunocytochemistry/ Immunofluorescence)

Komoll RM, Hu Q, von Dohlen L et al. MicroRNA-342-3p is a regulator of hepatocellular carcinoma regression. J Hepatol 2020-08-02 [PMID: 32738449]

Tice AL, Laudato JA, Fadool DA et al. -Acute binge alcohol alters whole-body metabolism and the time-dependent expression of skeletal muscle specific metabolic markers for multiple days in mice American journal of physiology. Endocrinology and metabolism 2022-07-06 [PMID: 35793479] (WB, Mouse)

Deguchi H, Yamashita T, Hiramoto N et al. Intracellular pH affects mitochondrial homeostasis in cultured human corneal endothelial cells prepared for cell injection therapy Scientific reports 2022-04-15 [PMID: 35428816] (ICC/IF, Human)

Kumagai S, Koyama S, Itahashi K Et al. Lactic acid promotes PD-1 expression in regulatory T cells in highly glycolytic tumor microenvironments Cancer Cell 2022-01-29 [PMID: 35090594]

Details:
Citation using the PE version of this antibody.

Mostafa, D, Yanagiya, A Et al. Loss of beta -cell identity and diabetic phenotype in mice caused by disruption of CNOT3-dependent mRNA deadenylation. Commun Biol 2020-08-28 [PMID: 32859966] (WB, Mouse)

Lai YC, Hsieh CY, Lu KY Et al. Monitoring Early Glycolytic Flux Alterations Following Radiotherapy in Cancer and Immune Cells: Hyperpolarized Carbon-13 Magnetic Resonance Imaging Study Metabolites 2021-08-06 [PMID: 34436459] (WB, Human)

Torres-Torrelo H, Ortega-Saenz P, Gao L, Lopez-Barneo J Lactate sensing mechanisms in arterial chemoreceptor cells Nature communications 2021-07-06 [PMID: 34230483] (IF/IHC)

Choi YS, Lee J, Lee HS et al. Offset of apparent hyperpolarized 13C lactate flux by the use of adjuvant metformin in ionizing radiation therapy in vivo NMR Biolmedical 2021-01-19 [PMID: 34080736] (WB, Mouse)

Jo YH Hydrocarboxylic acid receptor 1 in BAT regulates glucose uptake in mice fed a high-fat diet PLoS ONE 2020-01-30 [PMID: 31999787] (WB, Mouse)

More publications at http://www.novusbio.com/NBP1-59656

Procedures

Western Blot Protocol for Monocarboxylic acid transporter 1 Antibody (NBP1-59656)

Western Blot Protocol

1. Perform SDS-PAGE with a 12% gel on samples to be analyzed, loading 10 ug of total protein per lane.
2. Transfer proteins to membrane according to the instructions provided by the manufacturer of the membrane and transfer apparatus.
3. Stain according to standard Ponceau S procedure (or similar product) to assess transfer success, and mark molecular weight standards where appropriate.
4. Rinse the blot.
5. Block the membrane using standard blocking buffer for at least 1 hour.
6. Wash the membrane in wash buffer three times for 10 minutes each.
7. Dilute anti-Monocarboxylic acid transporter 1 primary antibody in blocking buffer and incubate 1 hour at room temperature.
8. Wash the membrane in wash buffer three times for 10 minutes each.
9. Apply the diluted HRP conjugated secondary antibody in blocking buffer (as per manufacturers instructions) and incubate 1 hour at room temperature.
10. Wash the blot in wash buffer three times for 10 minutes each (this step can be repeated as required to reduce background).
11. Apply the detection reagent of choice in accordance with the manufacturers instructions.

Note: Tween-20 can be added to the blocking or antibody dilution buffer at a final concentration of 0.05-0.2%.

Immunocytochemistry/Immunofluorescence Protocol for Monocarboxylic acid transporter 1 Antibody (NBP1-59656)

Immunocytochemistry Protocol

Culture cells to appropriate density in 35 mm culture dishes or 6-well plates.

1. Remove culture medium and add 10% formalin to the dish. Fix at room temperature for 30 minutes.
2. Remove the formalin and add ice cold methanol. Incubate for 5-10 minutes.
3. Remove methanol and add washing solution (i.e. PBS). Be sure to not let the specimen dry out. Wash three times for 10 minutes.
4. To block nonspecific antibody binding incubate in 10% normal goat serum from 1 hour to overnight at room temperature.
5. Add primary antibody at appropriate dilution and incubate at room temperature from 2 hours to overnight at room temperature.
6. Remove primary antibody and replace with washing solution. Wash three times for 10 minutes.
7. Add secondary antibody at appropriate dilution. Incubate for 1 hour at room temperature.
8. Remove antibody and replace with wash solution, then wash for 10 minutes. Add Hoechst 33258 to wash solution at 1:25,0000 and incubate for 10 minutes. Wash a third time for 10 minutes.
9. Cells can be viewed directly after washing. The plates can also be stored in PBS containing Azide covered in Parafilm (TM). Cells can also be cover-slipped using Fluoromount, with appropriate sealing.

*The above information is only intended as a guide. The researcher should determine what protocol best meets their needs. Please follow safe laboratory procedures.

Immunohistochemistry-Paraffin Protocol for Monocarboxylic acid transporter 1 Antibody (NBP1-59656)

Immunohistochemistry-Paraffin Embedded Sections

Antigen Unmasking:
Bring slides to a boil in 10 mM sodium citrate buffer (pH 6.0) then maintain at a sub-boiling temperature for 10 minutes. Cool slides on bench-top for 30 minutes.

Staining:
1. Wash sections in deionized water three times for 5 minutes each.
2. Wash sections in wash buffer for 5 minutes.
3. Block each section with 100-400 ul blocking solution for 1 hour at room temperature.
4. Remove blocking solution and add 100-400 ul diluted primary antibody. Incubate overnight at 4 C.
5. Remove antibody solution and wash sections in wash buffer three times for 5 minutes each.
6. Add 100-400 ul biotinylated diluted secondary antibody. Incubate 30 minutes at room temperature.
7. Remove secondary antibody solution and wash sections three times with wash buffer for 5 minutes each.
8. Add 100-400 ul Streptavidin-HRP reagent to each section and incubate for 30 minutes at room temperature.
9. Wash sections three times in wash buffer for 5 minutes each.
10. Add 100-400 ul DAB substrate to each section and monitor staining closely.
11. As soon as the sections develop, immerse slides in deionized water.
12. Counterstain sections in hematoxylin.
13. Wash sections in deionized water two times for 5 minutes each.
14. Dehydrate sections.
15. Mount coverslips.

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Products Related to NBP1-59656

NB800-PC1	HeLa Whole Cell Lysate
HAF008	Goat anti-Rabbit IgG Secondary Antibody [HRP]
NB7160	Goat anti-Rabbit IgG (H+L) Secondary Antibody [HRP]
NBP2-24891	Rabbit IgG Isotype Control

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.

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