abcam

# ab227978

# Anti-ENO1 antibody [EPR19758]

Anti-ENO1 antibody [EPR19758] (ab227978) is a rabbit monoclonal antibody detecting ENO1 in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- Biophysical QC for unrivalled batch-batch consistency
- Over 10 publications

Recombinant | RabMAb | 20ul selling size

## Key facts

| | |
|---|---|
| **Isotype** | IgG |
| **Host species** | Rabbit |
| **Storage buffer** | pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA |
| **Form** | Liquid |
| **Clonality** | Monoclonal |
| **Immunogen** | The exact immunogen used to generate this antibody is proprietary information. |
| **Clone number** | EPR19758 |
| **Purification technique** | Affinity purification Protein A |
| **Specificity** | ab227978 does not cross-react with ENO2 or ENO3. |
| **Concentration** | 0.652 mg/mL The concentration of this product may be batch-dependent<br>Batch concentration finder → |

## Reactivity data

## IP

**Tested**

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 1/30 |
| **Notes** | - |

### Expected

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

## WB

### Tested

| | |
|---|---|
| **Species** | Mouse |
| **Dilution info** | 1/1000 |
| **Notes** | - |

| | |
|---|---|
| **Species** | Rat |
| **Dilution info** | 1/1000 |
| **Notes** | - |

### Expected

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | Use at an assay dependent concentration. |
| **Notes** | - |

## ICC/IF

### Tested

| | |
|---|---|
| **Species** | Mouse |
| **Dilution info** | 1/500 |
| **Notes** | - |

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 1/500 |
| **Notes** | - |

### Expected

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

## Flow Cyt (Intra)

### Tested

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 1/600 |
| **Notes** | - |

### Expected

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

## IHC-P

### Tested

| | |
|---|---|
| **Species** | Mouse |
| **Dilution info** | 1/2000 |
| **Notes** | Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol. |

| | |
|---|---|
| **Species** | Rat |
| **Dilution info** | 1/2000 |

| | |
|---|---|
| **Notes** | Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol. |

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 1/2000 |
| **Notes** | Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol. |

## Target data

See full target information ENO1

| | |
|---|---|
| **Function** | Enolase that catalyzes the conversion of 2-phosphoglycerate to phosphoenolpyruvate in glycolysis and the reverse reaction in gluconeogenesis (PubMed:1369209, PubMed:29775581). Also involved in various processes such as growth control, hypoxia tolerance and allergic responses (PubMed:10802057, PubMed:12666133, PubMed:2005901, PubMed:29775581). May also function in the intravascular and pericellular fibrinolytic system due to its ability to serve as a receptor and activator of plasminogen on the cell surface of several cell-types such as leukocytes and neurons (PubMed:12666133). Stimulates immunoglobulin production (PubMed:1369209). Isoform MBP-1. Binds to the myc promoter and acts as a transcriptional repressor. May be a tumor suppressor. |

## Storage

| | |
|---|---|
| **Shipped at conditions** | Conditional Ambient |
| **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

**What is this antibody validated in?**
Anti-ENO1 antibody [EPR19758] (ab227978) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunoprecipitation (IP), Immunohistochemistry (IHC-P),

Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

**What is the molecular weight of ENO1?**
Anti-ENO1 [EPR19758] (ab227978) specifically detects a band for ENO1 (UniProt: P06733) at a molecular weight of 47kDa.

**Trusted by the scientific community**
Anti-ENO1 [EPR19758] (ab227978) was first used in a scientific publication in 2017 and has been cited over 10 times in peer-reviewed journals.

**Other related products**
We have a range of other formats of antibody clone [EPR19758] also available for your convenience: ab227978, Carrier free - ab229378, Alexa Fluor® 488 - ab303582, Alexa Fluor® 647 - ab303584, PE - ab305880, APC - ab305881, HRP - ab305882, Alkaline Phosphatase - ab308642, Alexa Fluor® 594 - ab310344, Alexa Fluor® 555 - ab311866, Alexa Fluor® 568 - ab312335, Alexa Fluor® 750 - ab321462

**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.

**Trial sizes available!**
Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

## Supplementary info

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

| | |
|---|---|
| **Activity summary** | Enolase 1 or alpha-enolase is an important enzyme in the glycolytic pathway. It catalyzes the conversion of 2-phosphoglycerate to phosphoenolpyruvate. We also refer to it as an enolase reaction. ENO1 protein has a molecular mass of approximately 47 kDa and is expressed in most tissues but found most abundantly in the brain muscle and liver. Additionally ENO1 can exist in both cytosolic and plasma membrane-associated forms playing functional roles in different cellular contexts. |
| **Biological function summary** | The ENO1 protein serves multiple functions beyond its glycolytic activity. It also acts as a plasminogen receptor on the cell surface aiding in the modulation of pericellular and extracellular matrix degradation processes. Through this role ENO1 influences cell migration and tissue remodeling. This protein can form part |

| | |
|---|---|
| | of larger protein complexes contributing to its versatility in various cellular functions. |
| **Pathways** | ENO1 plays a critical role in glycolysis a central metabolic pathway that converts glucose into pyruvate generating ATP as a result. In this pathway ENO1 closely interacts with other enzymes like phosphoglycerate kinase and pyruvate kinase. Additionally as a plasminogen receptor ENO1 links to the plasminogen activation pathway affecting fibrinolysis and cellular response to tissue injury. |
| **Associated diseases and disorders** | ENO1 is associated with cancer and neurodegenerative diseases. Overexpression or aberrant regulation of ENO1 often correlates with tumor progression and metastasis in cancers such as lung and breast cancer. In neurodegenerative disorders like Alzheimer's disease abnormal functioning of ENO1 can impact brain energy metabolism and neuron degeneration. ENO1's interaction with other proteins such as beta-enolase further connects it to these conditions influencing disease mechanisms and patient outcomes. |

## 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**

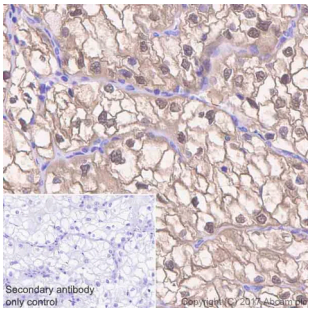
We do not recommend this combination. It is not covered by our product promise.

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.

## 10 product images

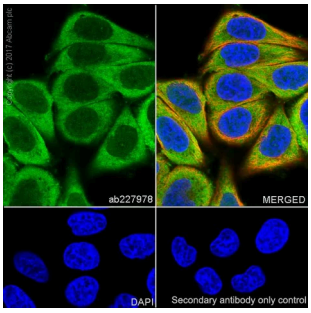



## Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ENO1 antibody [EPR19758] (ab227978)

ENO1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ENO1 antibody

Immunohistochemical analysis of paraffin-embedded human clear cell renal cell carcinoma tissue labeling ENO1 with ab227978 at 1/2000 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Membranous and nuclear staining in human clear cell kidney carcinoma (PMID: 26037892) is observed. Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).

Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).

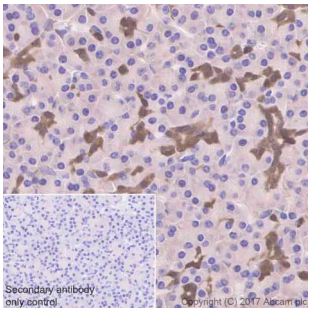



## Immunocytochemistry/ Immunofluorescence - Anti-ENO1 antibody [EPR19758] (ab227978)

ENO1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ENO1 antibody

Immunofluorescent analysis of 4% paraformaldegyde-fixed, 0.1% Triton X-100 permeabilized HeLa (human epithelial cell line from cervix adenocarcinoma) cells labeling ENO1 with ab227978 at 1/500 dilution, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing cytoplasmic and weakly nuclear staining in HeLa cell line.
The nuclear counterstain is DAPI (blue). Tubulin is detected with Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) (ab195889) at 1/200 dilution (red).

-ve control: PBS instead of primary antibody, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution .

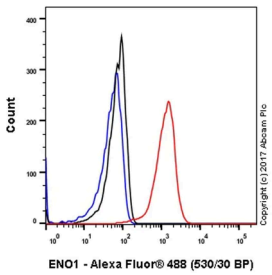



## Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ENO1 antibody [EPR19758] (ab227978)

ENO1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ENO1 antibody

Immunohistochemical analysis of paraffin-embedded human pancreas tissue labeling ENO1 with ab227978 at 1/2000 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Cytoplasmic and nuclear staining in medium-small ducts of human pancreas (PMID: 19425054) is observed. Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).

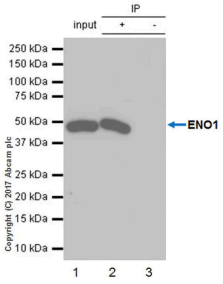
Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).




## Flow Cytometry (Intracellular) - Anti-ENO1 antibody [EPR19758] (ab227978)

ENO1 Flow Cytometry (Intracellular) staining using rabbit Anti-ENO1 antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed, 90% methanol-permeabilized HeLa (human epithelial cell line from cervix adenocarcinoma) cells labeling ENO1 with ab227978 at 1/600 dilution (red) compared witha Rabbit IgG, monoclonal [EPR25A] - Isotype Control (ab172730) (black) and an unlabeled control (cells without incubation with primary antibody and secondary antibody) (blue).
Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077), at 1/2000 dilution was used as the secondary antibody.




## Immunoprecipitation - Anti-ENO1 antibody [EPR19758] (ab227978)

ENO1 was immunoprecipitated from 0.35 mg of Jurkat (human T cell leukemia cell line from peripheral blood) whole cell lysate with ab227978 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab227978 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10000 dilution.
Lane 1: Jurkat whole cell lysate 10 µg (Input).

Lane 2: ab227978 IP in Jurkat whole cell lysate.

Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab227978 in Jurkat whole cell lysate.

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

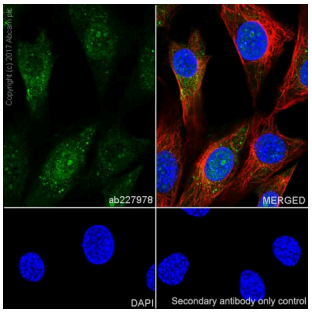
Exposure time: 3 seconds.

All lanes:
Immunoprecipitation - Anti-ENO1 antibody [EPR19758] (ab227978)

Developed using the ECL technique.

Predicted band size: 47 kDa

Observed band size: 47 kDa

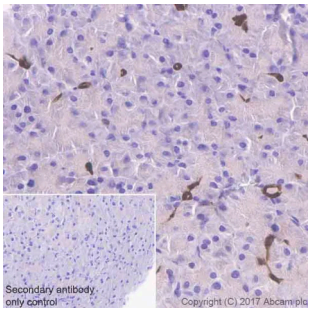



## Immunocytochemistry/ Immunofluorescence - Anti-ENO1 antibody [EPR19758] (ab227978)

ENO1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ENO1 antibody

Immunofluorescent analysis of 4% paraformaldegyde-fixed, 0.1% Triton X-100 permeabilized NIH/3T3 (mouse embryo fibroblast cell line) cells labeling ENO1 with ab227978 at 1/500 dilution, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing cytoplasmic and nuclear staining in NIH/3T3 cell line. The nuclear counterstain is DAPI (blue). Tubulin is detected with Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) (ab195889) at 1/200 dilution (red).

-ve control: PBS instead of primary antibody, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution .



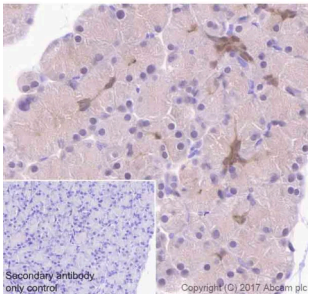

## Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ENO1 antibody [EPR19758] (ab227978)

ENO1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ENO1 antibody

Immunohistochemical analysis of paraffin-embedded mouse pancreas tissue labeling ENO1 with ab227978 at 1/2000 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Cytoplasmic and nuclear staining in medium-small ducts of mouse pancreas is observed. Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).

Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).

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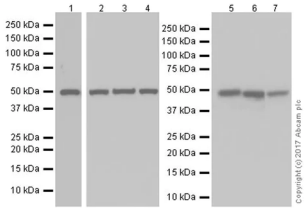



## Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ENO1 antibody [EPR19758] (ab227978)

Immunohistochemical analysis of paraffin-embedded rat pancreas tissue labeling ENO1 with ab227978 at 1/2000 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Cytoplasmic and nuclear staining in medium-small ducts of rat pancreas is observed. Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).

Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).

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## Western blot - Anti-ENO1 antibody [EPR19758] (ab227978)

ENO1 Western blot staining using rabbit Anti-ENO1 antibody

Blocking and dilution buffer: 5% NFDM/TBST.
Exposure times.

Lane 1: 15 seconds.

Lanes 2-7: 1 second.

All lanes:
Western blot - Anti-ENO1 antibody [EPR19758] (ab227978) at 1/1000 dilution

Lane 1:
Human skeletal muscle tissue lysate at 20 µg

Lane 2:
MCF7 (human breast adenocarcinoma cell line) whole cell lysate at 20 µg

Lane 3:
HeLa (human epithelial cell line from cervix adenocarcinoma) whole cell lysate at 20 µg

Lane 4:
Jurkat (human T cell leukemia cell line from peripheral blood) whole cell lysate at 20 µg

Lane 5:
C6 (rat glial tumor glial cell line) whole cell lysate at 10 µg

Lane 6:

RAW 264.7 (mouse macrophage cell line transformed with Abelson murine leukemia virus) whole cell lysate at 10 µg

Lane 7:
NIH/3T3 (mouse embryo fibroblast cell line) whole cell lysate at 10 µg

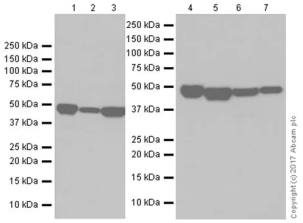
Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Developed using the ECL technique.

Predicted band size: 47 kDa

Observed band size: 47 kDa




## Western blot - Anti-ENO1 antibody [EPR19758] (ab227978)

Blocking and dilution buffer: 5% NFDM/TBST.
All lanes:
Western blot - Anti-ENO1 antibody [EPR19758] (ab227978) at 1/1000 dilution

Lane 1:
Mouse brain tissue lysate at 10 µg

Lane 2:
Mouse heart tissue lysate at 10 µg

Lane 3:
Mouse kidney tissue lysate at 10 µg

Lane 4:
Rat brain tissue lysate at 10 µg

Lane 5:
Rat heart tissue lysate at 10 µg

Lane 6:
Rat liver tissue lysate at 10 µg

Lane 7:
Rat spleen tissue lysate at 10 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Developed using the ECL technique.

Predicted band size: 47 kDa

Observed band size: 47 kDa

Exposure time: 3min

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