abcam

ab317974

# Alexa Fluor® 488 Anti-VDAC1/Porin + VDAC2 antibody [EPR10852(B)] – Mitochondrial Loading Control

Recombinant | RabMAb

## Key facts

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|---|---|
| **Isotype** | IgG |
| **Host species** | Rabbit |
| **Conjugation** | Alexa Fluor® 488 |
| **Excitation/Emission** | Ex: 495nm, Em: 519nm |
| **Storage buffer** | pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS, 30% Glycerol (glycerin, glycerine), 1% BSA |
| **Form** | Liquid |
| **Clonality** | Monoclonal |
| **Immunogen** | The exact immunogen used to generate this antibody is proprietary information. |
| **Clone number** | EPR10852(B) |
| **Purification technique** | Affinity purification Protein A |
| **Concentration** | 0.5 mg/mL The concentration of this product may be batch-dependent<br>Batch concentration finder → |

## Reactivity data

## Target Binding Affinity

**Expected**

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

## Antibody Labelling

### Expected

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

## Flow Cyt (Intra)

### Expected

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

## ICC/IF

### Expected

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

## IHC-P

### Expected

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

## Target data

See full target information VDAC1

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| **Function** | Non-selective voltage-gated ion channel that mediates the transport of anions and cations through the mitochondrion outer membrane and plasma membrane (PubMed:10661876, PubMed:11845315, PubMed:18755977, PubMed:30061676, PubMed:8420959). The channel at the outer mitochondrial membrane allows diffusion of small hydrophilic molecules; in the plasma membrane it is involved in cell volume regulation and apoptosis (PubMed:10661876, PubMed:11845315, PubMed:18755977, PubMed:8420959). It adopts an open conformation at low or zero membrane potential and a closed conformation at potentials above 30-40 mV (PubMed:10661876, PubMed:18755977, PubMed:8420959). The open state has a weak anion selectivity whereas the closed state is cation-selective (PubMed:18755977, PubMed:8420959). Binds various signaling molecules, including the sphingolipid ceramide, the phospholipid phosphatidylcholine, and the sterols cholesterol and oxysterol (PubMed:18755977, PubMed:31015432). In depolarized mitochondria, acts downstream of PRKN and PINK1 to promote mitophagy or prevent apoptosis; polyubiquitination by PRKN promotes mitophagy, while monoubiquitination by PRKN decreases mitochondrial calcium influx which ultimately inhibits apoptosis (PubMed:32047033). May participate in the formation of the permeability transition pore complex (PTPC) responsible for the release of mitochondrial products that triggers apoptosis (PubMed:15033708, PubMed:25296756). May mediate ATP export from cells (PubMed:30061676). Part of a complex composed of HSPA9, ITPR1 and VDAC1 that regulates mitochondrial calcium-dependent apoptosis by facilitating calcium transport from the ER lumen to the mitochondria intermembrane space thus providing calcium for the downstream calcium channel MCU that directly releases it into mitochondria matrix (By similarity). Mediates cytochrome c efflux (PubMed:20230784). Catalyzes the scrambling of phospholipids across the outer mitochondrial membrane; the mechanism is unrelated to channel activity and is capable of translocating both anionic and zwitterionic phospholipids. |

## Storage

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| **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, Store in the dark |

# Notes

**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.

**How are conjugated primary antibodies validated?**
This conjugated primary antibody is released using a quantitative quality control method that evaluates binding affinity post-conjugation and efficiency of antibody labeling.
For suitable applications and species reactivity, please refer to the unconjugated version of this clone.

Alexa Fluor® is a registered trademark of Molecular Probes, Inc, a Thermo Fisher Scientific Company. The Alexa Fluor® dye included in this product is provided under an intellectual property license from Life Technologies Corporation. As this product contains the Alexa Fluor® dye, the purchase of this product conveys to the buyer the non-transferable right to use the purchased product and components of the product only in research conducted by the buyer (whether the buyer is an academic or for-profit entity). As this product contains the Alexa Fluor® dye the sale of this product is expressly conditioned on the buyer not using the product or its components, or any materials made using the product or its components, in any activity to generate revenue, which may include, but is not limited to use of the product or its components: in manufacturing; (ii) to provide a service, information, or data in return for payment (iii) for therapeutic, diagnostic or prophylactic purposes; or (iv) for resale, regardless of whether they are sold for use in research. For information on purchasing a license to this product for purposes other than research, contact Life Technologies Corporation, 5781 Van Allen Way, Carlsbad, CA 92008 USA or outlicensing@thermofisher.com.

# Supplementary info

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

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|---|---|
| **Activity summary** | The VDAC1/Porin and VDAC2 proteins also known as voltage-dependent anion-selective channel 1 and 2 serve as important pore-forming proteins within the mitochondrial outer membrane. Each VDAC protein has a molecular mass of about 30-35 kDa. Commonly referred to as the 'porin hub' due to their central role in metabolite exchange VDAC1 and VDAC2 facilitate the transport of ions and small molecules between the mitochondria and cytoplasm regulating energy production and cellular metabolism. They express widely across various tissues highlighting their essential role in cellular functions. |
| **Biological function summary** | Voltage-dependent anion channels like VDAC1/Porin and VDAC2 modulate the exchange of ions and metabolic substrates playing a significant role in apoptosis and the maintenance of mitochondrial functions. As integral parts of mitochondrial complexes they interact with proteins such as hexokinase which anchors to VDAC1 and influences glycolytic flux linking energy production with |

| | |
|---|---|
| | apoptotic signaling pathways. This positions VDAC proteins as key regulators of cellular energy homeostasis. |
| **Pathways** | VDAC1/Porin and VDAC2 engage prominently in the apoptotic and mitochondrial permeability transition pathways. In the apoptosis pathway they interact with anti-apoptotic proteins like Bcl-xl and pro-apoptotic members like Bax highlighting their dual role in cell survival and death. These interactions highlight the proteins' contribution to mitochondrial outer membrane permeabilization (MOMP) a critical event in the release of cytochrome c and subsequent apoptosome formation further integrating them into broader signaling networks. |
| **Associated diseases and disorders** | Dysfunctions in VDAC1/Porin and VDAC2 link to neurodegenerative diseases and cancer. Aberrant VDAC1 activity connects with Alzheimer's disease due to its role in mitochondrial dysfunction affecting amyloid-beta peptide accumulation and neuronal cell death. In cancer VDAC overexpression associates with altered cellular metabolism and resistance to apoptosis positioning these proteins as potential therapeutic targets. Interactions with proteins such as hexokinase and Bcl-2 family members further emphasize their role in these pathological processes. |

## 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**

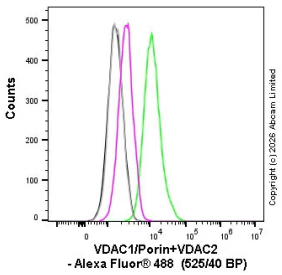
We do not recommend this combination. It is not covered by our product promise.

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.

## 2 product images




## Flow Cytometry (Intracellular) - Alexa Fluor® 488 Anti-VDAC1/Porin + VDAC2 antibody [EPR10852(B)] – Mitochondrial Loading Control (ab317974)

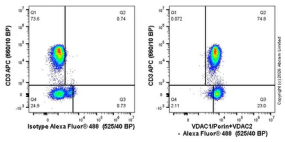
VDAC1/Porin + VDAC2 Flow Cytometry (Intracellular) staining using rabbit Anti-VDAC1/Porin + VDAC2 antibody

Flow cytometry overlay histogram showing wild-type HAP1 (green line) and VDAC1 knockout HAP1 stained with ab317974 (magenta line). The cells were fixed with 80% methanol (5 min) and then permeabilised with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS containing 10% normal goat serum to block non-specific protein-protein interaction followed by the antibody (ab317974) (1x $10^6$ in 100µl at 0.04 µg/ml (1/12500)) for 30min at 22°C.

Isotype control antibody was Alexa Fluor® 488 Rabbit IgG, monoclonal [EPR25A] - Isotype Control (black line) in HAP1 WT cells (black line) and HAP1-VDAC1 KO cells (grey line), used at the same concentration and conditions as the primary antibody.

Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.

This data was acquired using a Beckman Coulter CytoFlexLX flow cytometer.



## Flow Cytometry (Intracellular) - Alexa Fluor® 488 Anti-VDAC1/Porin + VDAC2 antibody [EPR10852(B)] – Mitochondrial Loading Control (ab317974)

VDAC1/Porin + VDAC2 Flow Cytometry (Intracellular) staining of human peripheral mononuclear cells (PBMCs) using rabbit Anti-VDAC1/Porin + VDAC2 antibody

Flow cytometry scatter plots showing human peripheral mononuclear cells (PBMCs), either stained with ab317974 (right) or isotype control (left). The cells were fixed and permeabilised using BD CytoFix/CytoPerm™ (20 min). The cells were incubated in 1x PBS containing 10 µg/ml human IgG and 10% normal goat serum to block FC receptors and non-specific protein-protein interaction followed by the antibody (ab317974) (1x $10^6$ in 100µl at 0.2 µg/ml (1/2500)) for 30min on ice. Isotype control antibody was Recombinant Alexa Fluor® 488 Rabbit IgG, monoclonal [EPR25A] - Isotype Control. The cells were simultaneously stained with CD3.

Acquisition of >30000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.

This data was acquired using a Beckman Coulter CytoFlexLX flow cytometer.

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