abcam

ab247731

Anti-PHD1/prolyl hydroxylase antibody [EPR2745] - BSA and Azide free

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR2745
Purification technique	Affinity purification Protein A
Concentration	1.047 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	-

Notes	Perform antigen retrieval.

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

IP

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	-
Notes	-

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information EGLN2

Function

Prolyl hydroxylase that mediates hydroxylation of proline residues in target proteins, such as ATF4, IKBKB, CEP192 and HIF1A (PubMed:11595184, PubMed:12039559, PubMed:15925519, PubMed:16509823, PubMed:17114296, PubMed:23932902). Target proteins are preferentially recognized via a LXXLAP motif (PubMed:11595184, PubMed:12039559, PubMed:15925519). Cellular oxygen sensor that catalyzes, under normoxic conditions, the post-translational formation of 4-hydroxyproline in hypoxia-inducible factor (HIF) alpha proteins (PubMed:11595184, PubMed:12039559, PubMed:12181324, PubMed:15925519, PubMed:19339211). Hydroxylates a specific proline found in each of the oxygen-dependent degradation (ODD) domains (N-terminal, NODD, and C-terminal, CODD) of HIF1A (PubMed:11595184, PubMed:12039559, PubMed:12181324, PubMed:15925519). Also hydroxylates HIF2A (PubMed:11595184, PubMed:12039559, PubMed:15925519). Has a preference for the CODD site for both HIF1A and HIF2A (PubMed:11595184, PubMed:12039559, PubMed:15925519). Hydroxylated HIFs are then targeted for proteasomal degradation via the von Hippel-Lindau ubiquitination complex (PubMed:11595184, PubMed:12039559, PubMed:15925519). Under hypoxic conditions, the hydroxylation reaction is attenuated allowing HIFs to escape degradation resulting in their translocation to

the nucleus, heterodimerization with HIF1B, and increased expression of hypoxy-inducible genes (PubMed:11595184, PubMed:12039559, PubMed:15925519). EGLN2 is involved in regulating hypoxia tolerance and apoptosis in cardiac and skeletal muscle (PubMed:11595184, PubMed:12039559, PubMed:15925519). Also regulates susceptibility to normoxic oxidative neuronal death (PubMed:11595184, PubMed:12039559, PubMed:15925519). Links oxygen sensing to cell cycle and primary cilia formation by hydroxylating the critical centrosome component CEP192 which promotes its ubiquitination and subsequent proteasomal degradation (PubMed:23932902). Hydroxylates IKBKB, mediating NF-kappa-B activation in hypoxic conditions (PubMed:17114296). Also mediates hydroxylation of ATF4, leading to decreased protein stability of ATF4 (By similarity).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab247731 is the carrier-free version of ab108980.

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.

Conjugation ready

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

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

Activity summary	Prolyl hydroxylase 1 (PHD1) also known as EGLN2 is an enzyme that hydroxylates specific proline residues within target proteins. This process of prolyl hydroxylation is critical for regulating protein stability. PHD1 shares structural similarities with other members of the 2-oxoglutarate-dependent dioxygenase family and includes a conserved iron-binding motif essential for its enzymatic activity. PHD1 has a molecular mass of approximately 46 kDa and is expressed in a variety of tissues with notable presence in skeletal muscle heart and the liver.
Biological function summary	PHD1 modulates the stability of the hypoxia-inducible factor (HIF) proteins which are key regulators of oxygen homeostasis in the cell. Under normoxic conditions PHD1 hydroxylates specific proline residues on HIF-alpha marking it for degradation via the ubiquitin-proteasome pathway. This enzyme does not function as part of a larger protein complex but it plays a pivotal role in determining the cellular response to oxygen levels. Additionally PHD1 expression affects the metabolic adaptation processes and energy expenditure in cells.
Pathways	PHD1 plays a role in the cellular response to hypoxia and is integral to the HIF signaling pathway. It interacts directly with HIF-alpha subunits mediating their degradation under normal oxygen conditions to ensure HIF activity remains inhibited. Additionally PHD1 is indirectly involved in modulating the angiogenesis pathway as it influences the availability of HIF-related transcription factors which promote transcription of vascular endothelial growth factor (VEGF) under low oxygen conditions. The interplay between PHD1 PHD2 and PHD3 ensures a fine-tuned regulation of the HIF pathway based on oxygen availability.
Associated diseases and disorders	PHD1 has links to cancer progression and ischemic conditions. The enzyme's activity is often altered in response to the aberrant hypoxic signaling found within tumors impacting cellular proliferation and survival. In ischemic conditions reduced PHD1 activity leads to stabilization of HIF proteins and adaptation responses aimed at tissue survival. Mutations or dysregulation in PHD1 expression have been observed in metabolic syndromes suggesting potential therapeutic targets. Through its control over hypoxia-related proteins PHD1 also interacts with von Hippel-Lindau (VHL) protein which is part of the E3 ubiquitin ligase complex important for HIF-alpha degradation.

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.

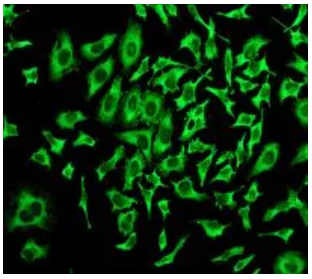
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

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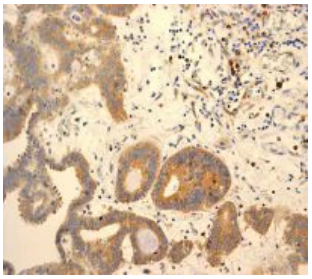
5 product images



Immunocytochemistry/ Immunofluorescence - Anti-PHD1/prolyl hydroxylase antibody [EPR2745] - BSA and Azide free (ab247731)

PHD1/prolyl hydroxylase Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-PHD1/prolyl hydroxylase antibody

This data was developed using ab108980, the same antibody clone in a different buffer formulation.Immunofluorescent staining of HeLa cells using ab108980

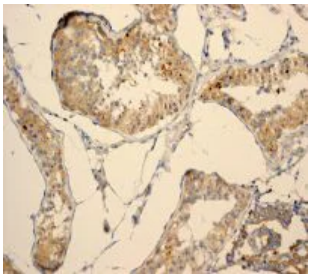


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PHD1/prolyl hydroxylase antibody [EPR2745] - BSA and Azide free (ab247731)

PHD1/prolyl hydroxylase Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-PHD1/prolyl hydroxylase antibody

This data was developed using ab108980, the same antibody clone in a different buffer formulation.
Immunohistochemical analysis of paraffin-embedded Human ovarian adenocarcinoma tissue using ab108980

Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

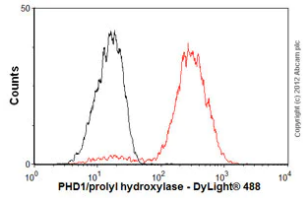


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PHD1/prolyl hydroxylase antibody [EPR2745] - BSA and Azide free (ab247731)

PHD1/prolyl hydroxylase Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-PHD1/prolyl hydroxylase antibody

This data was developed using ab108980, the same antibody clone in a different buffer formulation.
Immunohistochemical analysis of paraffin-embedded Human testis tissue using ab108980

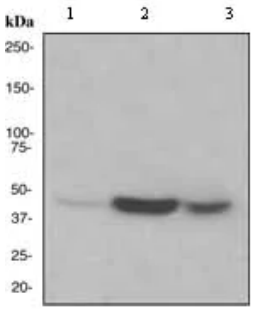
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Flow Cytometry (Intracellular) - Anti-PHD1/prolyl hydroxylase antibody [EPR2745] - BSA and Azide free (ab247731)

PHD1/prolyl hydroxylase Flow Cytometry (Intracellular) staining using rabbit Anti-PHD1/prolyl hydroxylase antibody

This data was developed using ab108980, the same antibody clone in a different buffer formulation.Overlay histogram showing HeLa cells stained with ab108980 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab108980, 1/100 dilution) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-rabbit IgG (H+L) (ab96899) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monclonal) (1µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed.



Western blot - Anti-PHD1/prolyl hydroxylase antibody [EPR2745] - BSA and Azide free (ab247731)

This data was developed using ab108980, the same antibody clone in a different buffer formulation.
All lanes:
Western blot - Anti-PHD1/prolyl hydroxylase antibody [EPR2745] (ab108980) at 1/1000 dilution

Lane 1:
A549 cell lysate at 10 µg

Lane 2:
HeLa cell lysate at 10 µg

Lane 3:
MCF-7 cell lysate at 10 µg

Secondary

All lanes:
Standard HRP labelled goat anti-rabbit at 1/2000 dilution

Predicted band size: 44 kDa

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