abcam

ab113077

Anti-PHD1/prolyl hydroxylase antibody [EPR2746]

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	EPR2746
Purification technique	Affinity purification Protein A
Concentration	0.257 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Mouse
Dilution info	1/50
Notes	**For unpurified use at 1/100 - 1/250.**

Species	Rat

Dilution info	1/50
Notes	**For unpurified use at 1/100 - 1/250.**

Species	Human
Dilution info	1/50
Notes	**For unpurified use at 1/100 - 1/250.**

WB

Tested

Species	Human
Dilution info	1/1000 - 1/10000
Notes	-

Expected

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

ICC/IF

Tested

Species	Human
Dilution info	1/50 - 1/100
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/30
Notes	-

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
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	Conditional Ambient
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Storage information	Stable for 12 months at -20°C

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.

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

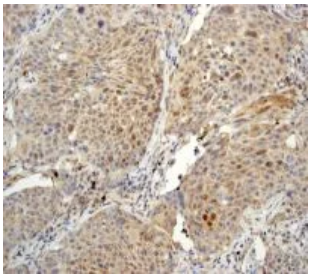
We do not recommend this combination. It is not covered by our product promise.

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.

9 product images

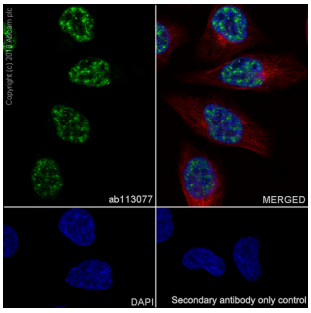


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077)

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

ab113077, at a 1/100 dilution, staining PHD1/prolyl hydroxylase in paraffin-embedded Human lung carcinoma tissue by Immunohistochemistry.
This image was generated using the unpurified version of the product.

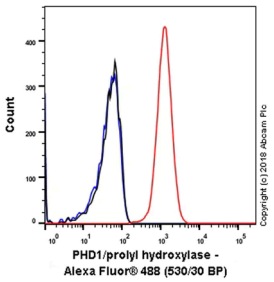
Heat mediated antigen retrieval was performed before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077)

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

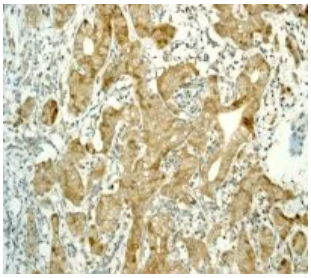
Immunocytochemistry/ Immunofluorescence analysis of HeLa (human cervix adenocarcinoma epithelial cell) cells labeling PHD1/prolyl hydroxylase with purified ab113077 at 1/50 dilution (5 µg/mL). Cells were fixed in 4% Paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1/200 (2.5 µg/mL). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1/1000 (2 µg/mL) dilution. DAPI (blue) was used as nuclear counterstain. ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1/200 (2.5 µg/mL) was used as the secondary antibody only control.



Flow Cytometry (Intracellular) - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077)

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

Intracellular Flow Cytometry analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling PHD1/prolyl hydroxylase with Purified ab113077 at 1/30 dilution (10µg/ml) (red). Cells were fixed with 4% Paraformaldehyde. A Goat anti rabbit IgG (Alexa Fluorr® 488, ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cell without incubation with primary antibody and secondary antibody (Blue).

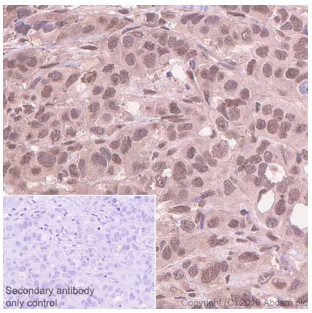


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077)

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

ab113077, at a 1/100 dilution, staining PHD1/prolyl hydroxylase in paraffin-embedded Human breast carcinoma tissue by Immunohistochemistry.
This image was generated using the unpurified version of the product.

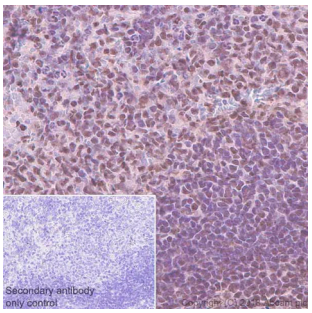
Heat mediated antigen retrieval was performed before commencing with IHC staining protocol.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077)

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

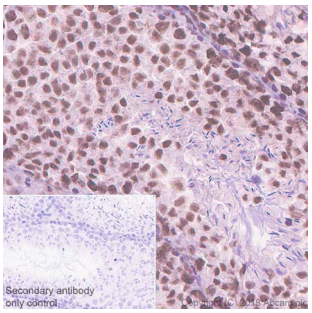
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human breast cancer tissue sections labeling PHD1/prolyl hydroxylase with Purified ab113077 at 1:50 dilution (5.14 µg/ml). Heat mediated antigen retrieval was performed using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use)was used as the secondary antibody. Negative control:PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077)

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

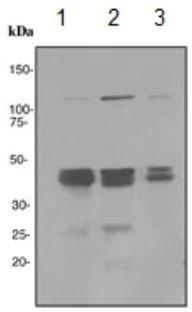
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Rat spleen tissue sections labeling PHD1/prolyl hydroxylase with Purified ab113077 at 1:50 dilution (5.14 µg/ml). Heat mediated antigen retrieval was performed using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use)was used as the secondary antibody. Negative control:PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077)

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

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Mouse testis tissue sections labeling PHD1/prolyl hydroxylase with Purified ab113077 at 1:50 dilution (5.14 µg/ml). Heat mediated antigen retrieval was performed using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use)was used as the secondary antibody. Negative control:PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Western blot - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077)

PHD1/prolyl hydroxylase Western blot staining using rabbit Anti-PHD1/prolyl hydroxylase antibody

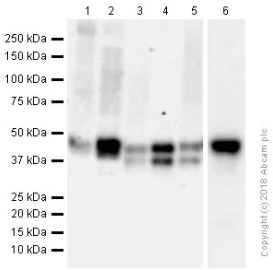
This image was generated using the unpurified version of the product.
All lanes:
Western blot - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077) at 1/1000 dilution

Lane 1:
A549 cell lysates at 10 µg

Lane 2:
HeLa cell lysates at 10 µg

Lane 3:
MCF-7 cell lysates at 10 µg

Predicted band size: 44 kDa



Western blot - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077)

All lanes:
Western blot - Anti-PHD1/prolyl hydroxylase antibody [EPR2746] (ab113077) at 1/1000 dilution

Lane 1:
MCF7 (Human breast adenocarcinoma epithelial cell) whole cell lysates at 20 µg

Lane 2:
Human fetal heart lysates at 20 µg

Lane 3:
Mouse brain lysates at 20 µg

Lane 4:
Mouse heart lysates at 20 µg

Lane 5:
Rat brain lysates at 20 µg

Lane 6:
Rat heart lysates at 20 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG (HRP) with minimal cross-reactivity with human IgG at 1/2000 dilution

Predicted band size: 44 kDa

Observed band size: 40 kDa, 43 kDa

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