abcam

ab200040

Anti-HAND2 antibody [EPR19451]

Anti-HAND2 antibody [EPR19451] (ab200040) is a rabbit monoclonal antibody detecting HAND2 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	EPR19451
Purification technique	Affinity purification Protein A
Concentration	0.429 mg/mL The concentration of this product may be batch-dependent 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	-

Not recommended

Species	Transfected cell lysate - Mouse
Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Human
Dilution info	1/1000
Notes	-

Species	Transfected cell lysate - Mouse
Dilution info	1/1000
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.

Notes	-

ICC/IF

Tested

Species	Mouse
Dilution info	1/100
Notes	-

Species	Human
Dilution info	1/100
Notes	-

Expected

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

Not recommended

Species	Transfected cell lysate - Mouse
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	1/400
Notes	-

Expected

Species	Human, Rat

Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Transfected cell lysate - Mouse
Dilution info	-
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/1000
Notes	The human species recommendation is based on the WB results. We do not guarantee IHC-P for human species. Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/1000
Notes	The human species recommendation is based on the WB results. We do not guarantee IHC-P for human species. Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Expected

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

Not recommended

Species	Transfected cell lysate - Mouse
Dilution info	-

Notes	-

Target data

See full target information HAND2

Function	Essential for cardiac morphogenesis, particularly for the formation of the right ventricle and of the aortic arch arteries. Required for vascular development and regulation of angiogenesis, possibly through a VEGF signaling pathway. Also plays an important role in limb development, particularly in the establishment of anterior-posterior polarization, acting as an upstream regulator of sonic hedgehog (SHH) induction in the limb bud. Is involved in the development of branchial arches, which give rise to unique structures in the head and neck. Binds DNA on E-box consensus sequence 5'-CANNTG-3' (By similarity).

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-HAND2 antibody [EPR19451] (ab200040) 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 HAND2?
Anti-HAND2 [EPR19451] (ab200040) specifically detects a band for HAND2 (UniProt: Q61039) at a molecular weight of 24kDa.

Trusted by the scientific community
Anti-HAND2 [EPR19451] (ab200040) 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 [EPR19451] also available for your convenience: ab200040, Carrier free - ab240353

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	HAND2 also known as Heart and Neural Crest Derivatives Expressed 2 is a transcription factor weighing approximately 22 kDa. This protein plays an important role in regulating the expression of genes necessary for specific cell differentiation processes. HAND2 is widely expressed in cardiac and neural tissues with a particular emphasis on the developing heart and nervous system. It belongs to the basic helix-loop-helix (bHLH) family of transcription factors which are known for their function in binding to E-box sequences in DNA and controlling gene expression.
Biological function summary	HAND2 influences cardiac morphogenesis and contributes to neural crest cell migration. It engages in complex interactions with other transcription factors to modulate the expression of genes involved in these processes. HAND2 operates as part of a transcriptional complex often forming heterodimers with other bHLH proteins like E47 and HEB which enhances its DNA-binding capability and specificity. This interaction is essential for the activation of downstream targets that control cellular differentiation and proliferation in cardiac and neural development.
Pathways	HAND2 is an important participant in both heart development and neural crest cell signaling. It integrates signals in the BMP (Bone Morphogenetic Protein) pathway and partners with proteins such as NKX2-5 and GATA4 which are critical for orchestrating cardiac gene expression. HAND2 also plays a significant role in the WNT signaling pathway contributing to the proper guidance and differentiation of neural crest derivatives.

Associated diseases and disorders	HAND2 mutations or dysregulation have links to congenital heart defects and neural crest-related disorders. In congenital heart defects altered HAND2 function impacts the expression levels of NKX2-5 and GATA4 leading to improper heart formation. Additionally HAND2's involvement in neural crest cell development associates its dysregulation with diseases such as Hirschsprung's disease. Pathological changes in HAND2 activity potentially disrupt the normal neural crest migration patterns contributing to these developmental anomalies.

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

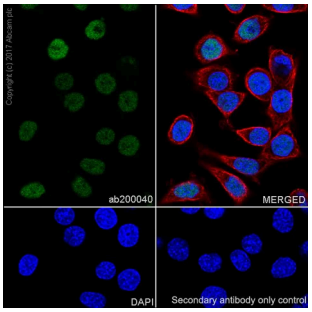
We do not recommend this combination. It is not covered by our product promise.

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

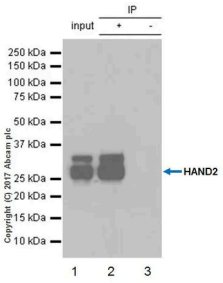


Immunocytochemistry/ Immunofluorescence - Anti-HAND2 antibody [EPR19451] (ab200040)

HAND2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-HAND2 antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized SH-SY5Y (human neuroblastoma cell line from bone marrow) cells labeling HAND2 with ab200040 at 1/100 dilution followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Nuclear staining in SH-SY5Y cell line.
The nuclear counter stain is DAPI (blue). Tubulin is detected with Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) (ab195889) (red) at 1/200 dilution.

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



Immunoprecipitation - Anti-HAND2 antibody [EPR19451] (ab200040)

HAND2 was immunoprecipitated from 0.35 mg of SH-SY5Y (human neuroblastoma cell line from bone marrow) whole cell lysate with ab200040 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab200040 at 1/500 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/1000 dilution.
Lane 1: SH-SY5Y whole cell lysate 10 µg (Input).

Lane 2: ab200040 IP in SH-SY5Y whole cell lysate.

Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab200040 in SH-SY5Y whole cell lysate.

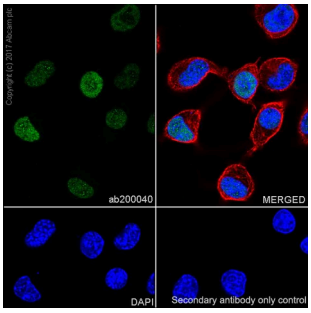
Exposure time: Less than 1 second.

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

All lanes:
Immunoprecipitation - Anti-HAND2 antibody [EPR19451] (ab200040)

Predicted band size: 24 kDa

Observed band size: 26 kDa

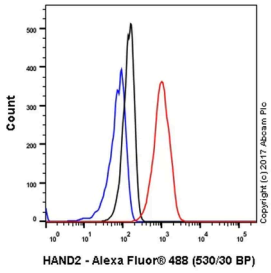


Immunocytochemistry/ Immunofluorescence - Anti-HAND2 antibody [EPR19451] (ab200040)

HAND2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-HAND2 antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized Neuro-2a (mouse neuroblastoma cell line) cells labeling HAND2 with ab200040 at 1/100 dilution followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Nuclear staining in Neuro-2a cell line.
The nuclear counter stain is DAPI (blue). Tubulin is detected with Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) (ab195889) (red) at 1/200 dilution.

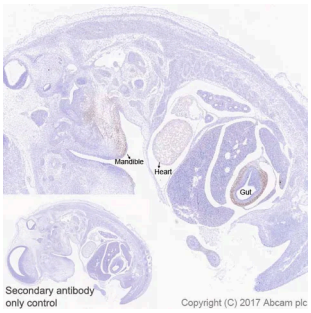
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution.



Flow Cytometry (Intracellular) - Anti-HAND2 antibody [EPR19451] (ab200040)

HAND2 Flow Cytometry (Intracellular) staining using rabbit Anti-HAND2 antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed, 90% methanol-permeabilized Neuro-2a (mouse neuroblastoma cell line) cell line labeling HAND2 with ab200040 at 1/400 dilution (red) compared with a 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 Fluorr® 488) (ab150077) at 1/2000 dilution was used as the secondary antibody.

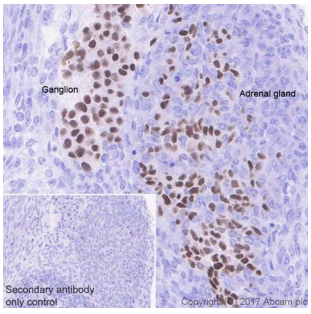


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HAND2 antibody [EPR19451] (ab200040)

HAND2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-HAND2 antibody

Immunohistochemical analysis of paraffin-embedded rat E14.5 embryonic tissue labeling HAND2 with ab200040 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Nuclear staining in multiple rat embryonic (E14.5) tissues (PMID: 25248475). Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) Ready to use.

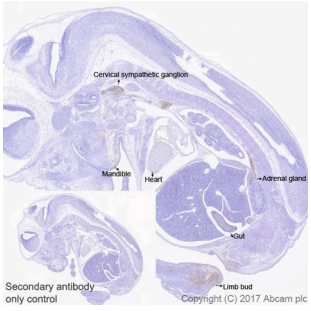
Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HAND2 antibody [EPR19451] (ab200040)

Immunohistochemical analysis of paraffin-embedded mouse E14.5 embryonic adrenal gland tissue labeling HAND2 with ab200040 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Nuclear staining in mouse embryonic (E14.5) ganglion and adrenal gland (PMID: 25248475). Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) Ready to use.

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

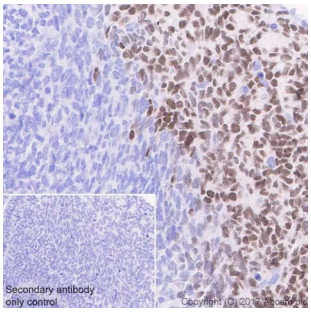


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HAND2 antibody [EPR19451] (ab200040)

HAND2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-HAND2 antibody

Immunohistochemical analysis of paraffin-embedded mouse E14.5 embryo tissue labeling HAND2 with ab200040 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Nuclear staining in multiple tissues of E14.5 mouse embryo (PMID: 25248475). Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) Ready to use.

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

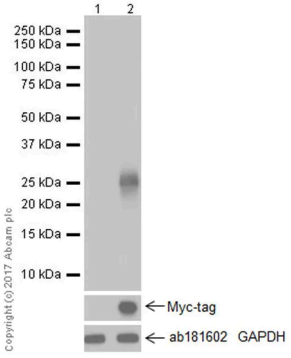


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HAND2 antibody [EPR19451] (ab200040)

HAND2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-HAND2 antibody

Immunohistochemical analysis of paraffin-embedded rat E14.5 embryonic gut tissue labeling HAND2 with ab200040 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Nuclear staining in rat E14.5 embryonic gut (PMID: 25248475). Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) Ready to use.

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



Western blot - Anti-HAND2 antibody [EPR19451] (ab200040)

Blocking/Dilution buffer: 5% NFDM/TBST.
The plasmid was kindly provided by Dr. Zhongzhou Yang from Nanjing University.

All lanes:
Western blot - Anti-HAND2 antibody [EPR19451] (ab200040) at 1/1000 dilution

Lane 1:
HEK-293T (human epithelial cell line from embryonic kidney transformed with large T antigen) transfected with an empty vector (vector control) containing a myc tag, whole cell lysate at 10 µg

Lane 2:
HEK-293T (human epithelial cell line from embryonic kidney transformed with large T antigen) transfected with mouse HAND2 expression vector containing a myc tag, whole cell lysate at 10 µg

Secondary

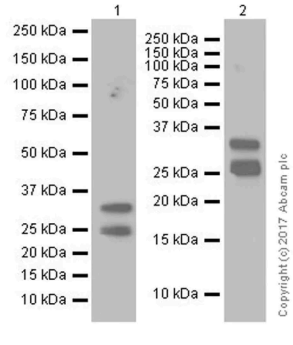
All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Developed using the ECL technique.

Predicted band size: 116 kDa, 24 kDa

Observed band size: 117 kDa, 26 kDa

Exposure time: 1s



Western blot - Anti-HAND2 antibody [EPR19451] (ab200040)

HAND2 Western blot staining using rabbit Anti-HAND2 antibody

Exposure times: Lane 1: 3 minutes; Lane 2: 10 seconds.

Blocking/Dilution buffer: 5% NFDM/TBST.

The molecular mass observed is consistent with what has been described in the literature (PMID: 26166202); the upper band could be ubiquitinated Hand2 (PMID 21170031).

All lanes:

Western blot - Anti-HAND2 antibody [EPR19451] (ab200040) at 1/1000 dilution

Lane 1:
Neuro-2a (mouse neuroblastoma cell line) whole cell lysate at 10 µg

Lane 2:
SH-SY5Y (human neuroblastoma cell line from bone marrow) 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: 24 kDa

Observed band size: 25 kDa

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