abcam

ab185141

Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102]

Recombinant | RabMAb | KO Validated | 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	EPR18814-102
Purification technique	Affinity purification Protein A
Specificity	Unsuitable for human IHC-P.
Concentration	0.619 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Mouse
Dilution info	1/30

Notes	-

Expected

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

WB

Tested

Species	Mouse
Dilution info	1/5000
Notes	-

Species	Rat
Dilution info	1/5000
Notes	-

Species	Human
Dilution info	1/5000
Notes	-

ICC/IF

Tested

Species	Mouse
Dilution info	1/150
Notes	-

Species	Human
Dilution info	1/150
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	1/60
Notes	-

Expected

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

IHC-P

Tested

Species	Mouse
Dilution info	1/4000
Notes	This antibody is not recommended for IHC in human.

Species	Rat
Dilution info	1/4000
Notes	This antibody is not recommended for IHC in human.

Not recommended

Species	Human
Dilution info	-
Notes	This antibody is not recommended for IHC in human.

Target data

See full target information Glycogen synthase kinase-3 alpha

Function	Constitutively active protein kinase that acts as a negative regulator in the hormonal control of glucose homeostasis, Wnt signaling and regulation of transcription factors and microtubules, by phosphorylating and inactivating glycogen synthase (GYS1 or GYS2), CTNNB1/beta-catenin, APC and AXIN1 (PubMed:11749387, PubMed:17478001, PubMed:19366350). Requires primed phosphorylation of the majority of its substrates (PubMed:11749387, PubMed:17478001, PubMed:19366350). Contributes to insulin regulation of glycogen synthesis by phosphorylating and inhibiting GYS1 activity and hence glycogen synthesis (PubMed:11749387, PubMed:17478001, PubMed:19366350). Regulates glycogen metabolism in liver, but not in muscle (By similarity). May also mediate the development of insulin resistance by regulating activation of transcription factors (PubMed:10868943, PubMed:17478001). In Wnt signaling, regulates the level and transcriptional activity of nuclear CTNNB1/beta-catenin (PubMed:17229088). Facilitates amyloid precursor protein (APP) processing and the generation of APP-derived amyloid plaques found in Alzheimer disease (PubMed:12761548). May be involved in the regulation of replication in pancreatic beta-cells (By similarity). Is necessary for the establishment of neuronal polarity and axon outgrowth (By similarity). Through phosphorylation of the anti-apoptotic protein MCL1, may control cell apoptosis in response to growth factors deprivation (By similarity). Acts as a regulator of autophagy by mediating phosphorylation of KAT5/TIP60 under starvation conditions which activates KAT5/TIP60 acetyltransferase activity and promotes acetylation of key autophagy regulators, such as ULK1 and RUBCNL/Pacer (PubMed:30704899). Negatively regulates extrinsic apoptotic signaling pathway via death domain receptors. Promotes the formation of an anti-apoptotic complex, made of DDX3X, BRIC2 and GSK3B, at death receptors, including TNFRSF10B. The anti-apoptotic function is most effective with weak apoptotic signals and can be overcome by stronger stimulation (By similarity). Phosphorylates mTORC2 complex component RICTOR at 'Thr-1695' which facilitates FBXW7-mediated ubiquitination and subsequent degradation of RICTOR (PubMed:25897075).

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

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	Glycogen synthase kinase 3 beta (GSK3β) and glycogen synthase kinase 3 alpha (GSK3α) are serine/threonine protein kinases involved in various cellular processes. GSK3β weighs approximately 47 kDa while GSK3α is around 51 kDa. These proteins are expressed in various tissues including brain heart and liver. GSK3 isoforms act as key regulators in signaling pathways by phosphorylating target proteins affecting their function and stability. Alternative names for GSK3 include GSK-3β and GSK-3α respectively.
Biological function summary	The kinases play essential roles in cellular functions like glycogen metabolism cell cycle regulation and apoptosis. GSK3 proteins often function as part of larger enzyme complexes influencing cellular responses to external signals. They bind to numerous substrates impacting processes such as glucose homeostasis and neuron function. Dramatic changes in GSK3 activity can disrupt these biological processes highlighting their importance.
Pathways	These kinases are integral components of the Wnt/β-catenin and insulin signaling pathways. In the Wnt pathway GSK3 is involved in β-catenin phosphorylation affecting its degradation and transcriptional activity. In the insulin pathway GSK3 influences glycogen synthesis by phosphorylating and regulating glycogen synthase. Both pathways highlight how GSK3 interacts with other proteins such as adenomatous polyposis coli (APC) and axin to coordinate cellular activities.
Associated diseases and disorders	GSK3 has links to conditions like Alzheimer's disease and diabetes mellitus. Dysregulation of GSK3 activity is observed in Alzheimer's disease where abnormal GSK3 signaling contributes to tau hyperphosphorylation and neurofibrillary tangle formation. In diabetes altered GSK3 function affects insulin signaling pathways influencing glucose metabolism. GSK3's involvement in these diseases often connects it to proteins like tau in Alzheimer's and insulin receptor substrate 1 (IRS1) in diabetes.

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.

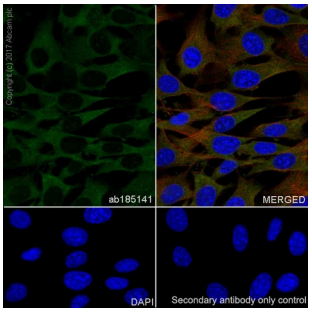
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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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10 product images

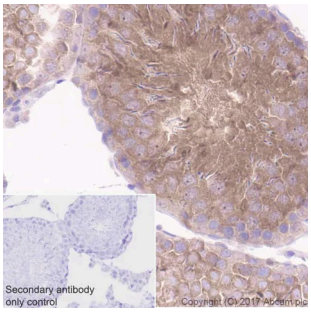


Immunocytochemistry/ Immunofluorescence - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

GSK3 beta + GSK3 alpha Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-GSK3 beta + GSK3 alpha antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized HeLa (human epithelial cell line from cervix adenocarcinoma) cells labeling GSK3 beta + GSK3 alpha with ab185141 at 1/150 dilution followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing cytoplasmic staining on HeLa cells.
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.

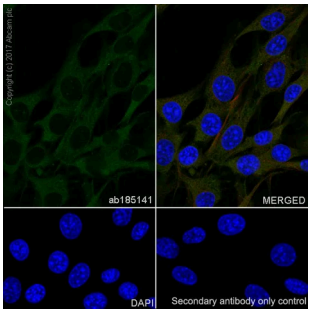
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

Immunohistochemical analysis of paraffin-embedded rat testis tissue labeling GSK3 beta + GSK3 alpha with ab185141 at 1/4000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Cytoplasmic staining on rat testis (PMID: 22792253). 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.

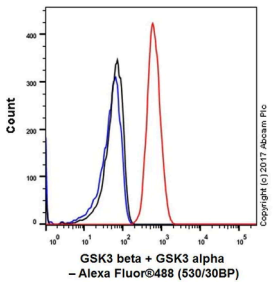


Immunocytochemistry/ Immunofluorescence - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

GSK3 beta + GSK3 alpha Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-GSK3 beta + GSK3 alpha antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized NIH/3T3 (mouse embryo fibroblast cell line) cells labeling GSK3 beta + GSK3 alpha with ab185141 at 1/150 dilution followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing cytoplasmic staining on NIH/3T3 cells.
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.

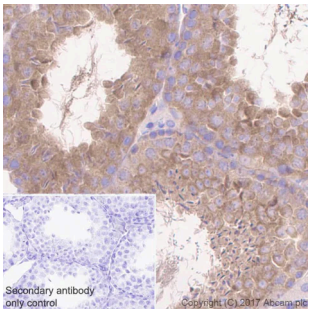
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution.



Flow Cytometry (Intracellular) - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

GSK3 beta + GSK3 alpha Flow Cytometry (Intracellular) staining using rabbit Anti-GSK3 beta + GSK3 alpha antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed,90% methanol-permeabilized NIH/3T3 (mouse embryo fibroblast cell line) cell line labeling GSK3 beta + GSK3 alpha with ab185141 at 1/60 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 Fluor® 488) (ab150077) at 1/2000 dilution was used as the secondary antibody.

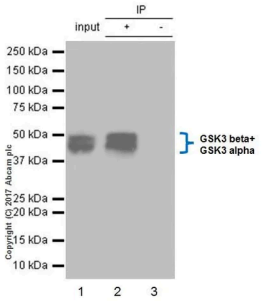


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

GSK3 beta + GSK3 alpha Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-GSK3 beta + GSK3 alpha antibody

Immunohistochemical analysis of paraffin-embedded mouse testis tissue labeling GSK3 beta + GSK3 alpha with ab185141 at 1/4000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Cytoplasmic staining on mouse testis (PMID: 22792253). 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.



Immunoprecipitation - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

GSK3 beta + GSK3 alpha was immunoprecipitated from 0.35 mg of NIH/3T3 (mouse embryo fibroblast cell line) whole cell lysate with ab185141 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab185141 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10000 dilution.
Lane 1: NIH/3T3 whole cell lysate 10 µg (Input).

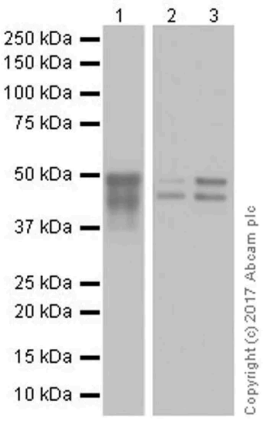
Lane 2: ab185141 IP in NIH/3T3 whole cell lysate.

Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab185141 in NIH/3T3 whole cell lysate.

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

Exposure time: 3 seconds.

All lanes:
Immunoprecipitation - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)



Western blot - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

Exposure time : Lane 1: 30 seconds; Lanes 2 and 3: 3 minutes.

Blocking/Dilution buffer: 5% NFDM/TBST.

All lanes:
Western blot - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141) at 1/5000 dilution

Lane 1:
Human fetal brain lysate at 10 µg

Lane 2:
Human fetal heart lysate at 10 µg

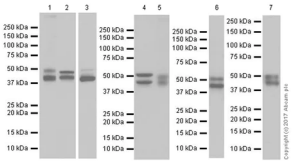
Lane 3:
Human fetal kidney lysate at 10 µg

Secondary

All lanes:
Western blot - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/4000 dilution

Developed using the ECL technique.

Observed band size: 47 kDa, 52 kDa



Western blot - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

Exposure time : Lanes 1 and 2:10 seconds; Lane 3: 1 minute; Lanes 4 and 5: 5 seconds; Lane 6:3 seconds; Lane 7:10 seconds.

Blocking/Dilution buffer: 5% NFDM/TBST.

All lanes:
Western blot - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141) at 1/5000 dilution

Lane 1:
NIH/3T3 (mouse embryo fibroblast cell line) whole cell lysate at 20 µg

Lane 2:
HeLa (human epithelial cell line from cervix adenocarcinoma) whole cell lysate at 20 µg

Lane 3:
A549 (human lung carcinoma cell line) whole cell lysate at 20 µg

Lane 4:
RAW 264.7 (mouse macrophage cell line transformed with Abelson murine leukemia virus) whole cell lysate at 20 µg

Lane 5:
PC-12 (rat adrenal gland pheochromocytoma cell line) whole cell lysate at 20 µg

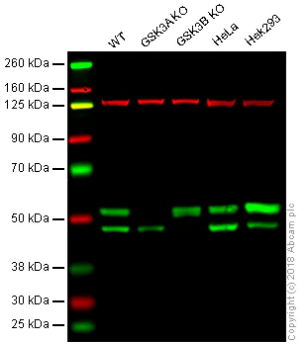
Lane 6:
Mouse heart lysate at 20 µg

Lane 7:
Rat heart lysate at 20 µg

Secondary

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

Observed band size: 47 kDa, 52 kDa



Western blot - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

GSK3 beta + GSK3 alpha Western blot staining using rabbit Anti-GSK3 beta + GSK3 alpha antibody

Lane 1: Wild-type HAP1 whole cell lysate (20 µg)
Lane 2: GSK3 alpha knockout HAP1 whole cell lysate (20 µg)
Lane 3: GSK3 beta whole cell lysate (20 µg)
Lane 4: HeLa whole cell lysate (20 µg)
Lane 5: Hek293 whole cell lysate (20 µg)
Lanes 1 - 5: Merged signal (red and green). Green - ab185141 observed at 47/52 kDa. Red - loading control, ab18058, observed at 130 kDa.

ab185141 was shown to specifically react with GSK3 alpha and GSK3 beta in wild-type HAP1 cells as signal was lost in GSK3 alpha and GSK3 beta knockout cells. Wild-type and GSK3 alpha and GSK3 beta knockout samples were subjected to SDS-PAGE. ab185141 and ab18058 (Mouse anti-Vinculin loading control) were incubated overnight at 4°C at 1/5000 dilution and 1/20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed ab216776 secondary antibodies at 1/10000 dilution for 1 hour at room temperature before imaging.

Lane 1:
Western blot - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

Lanes 2 - 5:
Western blot - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] - BSA and Azide free (ab226169) at 1/5000 dilution

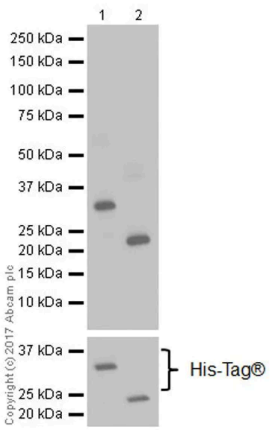
Lane 1:
Wild-type HAP1 whole cell lysate at 20 µg

Lane 2:
GSK3 alpha knockout HAP1 whole cell lysate at 20 µg

Lane 3:
GSK3 beta whole cell lysate at 20 µg

Lane 4:
HeLa whole cell lysate at 20 µg

Lane 5:
Hek293 whole cell lysate at 20 µg



Western blot - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141)

Blocking/Dilution buffer: 5% NFDM/TBST.
All lanes:
Western blot - Anti-GSK3 beta + GSK3 alpha antibody [EPR18814-102] (ab185141) at 1/1000 dilution

Lane 1:
His-tagged mouse GSK3 beta (aa218-420) recombinant protein at 0.01 µg

Lane 2:
His-tagged mouse GSK3 alpha (aa330-490) recombinant protein at 0.01 µg

Secondary

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

Developed using the ECL technique.

Exposure time: 1s

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