abcam

ab177941

Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody [EPR12713]

Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody [EPR12713] (ab177941) is a rabbit monoclonal antibody detecting OGT / O-Linked N-Acetylglucosamine Transferase in **Western Blot, Flow Cytometry (Intra), IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- Biophysical QC for unrivalled batch-batch consistency
- Over 20 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	EPR12713
Purification technique	Affinity purification Protein A
Concentration	0.38 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/50 - 1/100
Notes	Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

IP

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000 - 1/5000
Notes	-

Species	Mouse
Dilution info	1/1000 - 1/5000
Notes	-

Species	Rat
Dilution info	1/1000 - 1/5000
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	1/10 - 1/100
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

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

Target data

See full target information OGT

Function Catalyzes the transfer of a single N-acetylglucosamine from UDP-GlcNAc to a serine or threonine residue in cytoplasmic and nuclear proteins resulting in their modification with a beta-linked N-acetylglucosamine (O-GlcNAc) (PubMed:12150998, PubMed:15361863, PubMed:19451179, PubMed:20018868, PubMed:21240259, PubMed:21285374, PubMed:23103939, PubMed:26237509, PubMed:26369908, PubMed:26678539, PubMed:27713473, PubMed:37541260, PubMed:37962578). Glycosylates a large and diverse number of proteins including histone H2B, AKT1, AMPK, ATG4B, CAPRIN1, EZH2, FNIP1, GSDMD, KRT7, LMNA,

LMNB1, LMNB2, RPTOR, HOXA1, PFKL, KMT2E/MLL5, MAPT/TAU, TET2, RBL2, RET, NOD2 and HCFC1 (PubMed:19451179, PubMed:20200153, PubMed:21285374, PubMed:22923583, PubMed:23353889, PubMed:24474760, PubMed:26237509, PubMed:26369908, PubMed:26678539, PubMed:27527864, PubMed:30699359, PubMed:34074792, PubMed:34667079, PubMed:37541260, PubMed:37962578). Can regulate their cellular processes via cross-talk between glycosylation and phosphorylation or by affecting proteolytic processing (PubMed:21285374). Involved in insulin resistance in muscle and adipocyte cells via glycosylating insulin signaling components and inhibiting the 'Thr-308' phosphorylation of AKT1, enhancing IRS1 phosphorylation and attenuating insulin signaling (By similarity). Involved in glycolysis regulation by mediating glycosylation of 6-phosphofructokinase PFKL, inhibiting its activity (PubMed:22923583). Plays a key role in chromatin structure by mediating O-GlcNAcylation of 'Ser-112' of histone H2B: recruited to CpG-rich transcription start sites of active genes via its interaction with TET proteins (TET1, TET2 or TET3) (PubMed:22121020, PubMed:23353889). As part of the NSL complex indirectly involved in acetylation of nucleosomal histone H4 on several lysine residues (PubMed:20018852). O-GlcNAcylation of 'Ser-75' of EZH2 increases its stability, and facilitating the formation of H3K27me3 by the PRC2/EED-EZH2 complex (PubMed:24474760). Stabilizes KMT2E/MLL5 by mediating its glycosylation, thereby preventing KMT2E/MLL5 ubiquitination (PubMed:26678539). Regulates circadian oscillation of the clock genes and glucose homeostasis in the liver (By similarity). Stabilizes clock proteins BMAL1 and CLOCK through O-glycosylation, which prevents their ubiquitination and subsequent degradation (By similarity). Promotes the CLOCK-BMAL1-mediated transcription of genes in the negative loop of the circadian clock such as PER1/2 and CRY1/2. O-glycosylates HCFC1 and regulates its proteolytic processing and transcriptional activity (PubMed:21285374, PubMed:28302723, PubMed:28584052). Component of a THAP1/THAP3-HCFC1-OGT complex that is required for the regulation of the transcriptional activity of RRM1 (PubMed:20200153). Regulates mitochondrial motility in neurons by mediating glycosylation of TRAK1 (By similarity). Promotes autophagy by mediating O-glycosylation of ATG4B (PubMed:27527864). Acts as a regulator of mTORC1 signaling by mediating O-glycosylation of RPTOR and FNIP1: O-GlcNAcylation of RPTOR in response to glucose sufficiency promotes activation of the mTORC1 complex (PubMed:30699359, PubMed:37541260). Isoform 2. The mitochondrial isoform (mOGT) is cytotoxic and triggers apoptosis in several cell types including INS1, an insulinoma cell line. Isoform 4. Has N-acetylglucosaminyltransferase activity: glycosylates proteins, such as HNRNPU, NEUROD1, NUP62 and PDCD6IP (PubMed:31527085). Displays specific substrate selectivity compared to other isoforms (PubMed:31527085).

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-OGT / O-Linked N-Acetylglucosamine Transferase antibody [EPR12713] (ab177941) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of OGT / O-Linked N-Acetylglucosamine Transferase?
Anti-OGT / O-Linked N-Acetylglucosamine Transferase [EPR12713] (ab177941) specifically detects a band for OGT / O-Linked N-Acetylglucosamine Transferase (UniProt: O15294) at a molecular weight of 116kDa.

Trusted by the scientific community
Anti-OGT / O-Linked N-Acetylglucosamine Transferase [EPR12713] (ab177941) was first used in a scientific publication in 2013 and has been cited over 20 times in peer-reviewed journals.

Other related products
We have a range of other formats of antibody clone [EPR12713] also available for your convenience: ab177941, Alexa Fluor® 647 - ab198532, Alexa Fluor® 555 - ab215809, Carrier free - ab236014, PE - ab305958, APC - ab305959, HRP - ab305960, Alkaline Phosphatase - ab308846, Alexa Fluor® 488 - ab309777, Alexa Fluor® 594 - ab310575, Alexa Fluor® 568 - ab312586, Alexa Fluor® 750 - ab321209

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.

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	OGT or O-Linked N-Acetylglucosamine Transferase also known as OGT protein mechanically catalyzes the addition of N-acetylglucosamine (O-GlcNAc) onto serine or threonine residues of nuclear and cytoplasmic proteins. OGT has a molecular weight of approximately 110 kDa. It is expressed in various tissues with higher levels in the pancreas brain and spleen. This enzyme plays an important role in cellular processes by modifying proteins with O-GlcNAc.
Biological function summary	Through its transferase activity OGT regulates a wide array of cellular functions including signal transduction transcription and metabolism. It is a component of a complex involving several other proteins that facilitate its regulatory actions. OGT manages protein function and stability by influencing interactions between proteins and other cellular components.
Pathways	OGT is critical in the insulin signaling pathway and the regulation of glucose metabolism. It interacts with multiple proteins such as IRS-1 and Akt to modulate their activity and stability. The modification by OGT impacts protein phosphorylation states affecting the downstream processing of cellular signals.
Associated diseases and disorders	OGT has a significant link to diabetes and neurodegenerative diseases like Alzheimer's. Abnormal OGT activity relates to insulin resistance contributing to diabetes pathogenesis. In Alzheimer's disease altered O-GlcNAcylation affects proteins like tau which play a central role in disease progression. Understanding OGT's role in these conditions could aid in developing targeted therapeutic strategies.

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

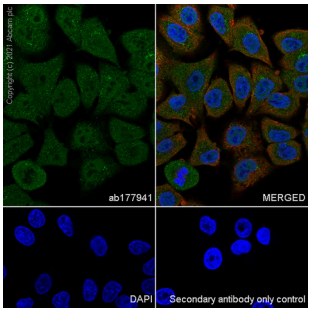
We do not recommend this combination. It is not covered by our product promise.

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.

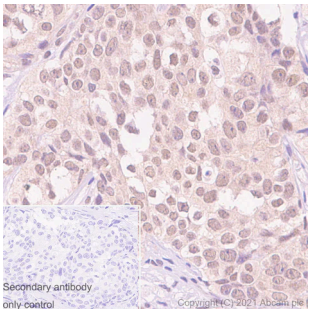
8 product images



Immunocytochemistry/ Immunofluorescence - Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody [EPR12713] (ab177941)

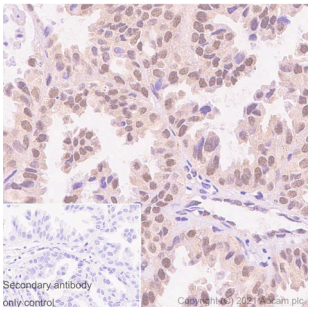
OGT / O-Linked N-Acetylglucosamine Transferase Immunocytochemistry/ Immunofluorescence staining of A549 (Human lung carcinoma epithelial cell) cells using rabbit Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody

Immunocytochemistry/ Immunofluorescence analysis of A549 (Human lung carcinoma epithelial cell) cells labeling OGT / O-Linked N-Acetylglucosamine Transferase using ab177941. The cells were fixed with 4% paraformaldehyde then permeabilized with 0.1% Triton X-100. The cells were then incubated with ab177941 at 1:100 dilution followed by a further incubation with a Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) at 2 µg/ml (shown in green). Nuclear DNA was labelled in blue with DAPI. Cells were counterstained using ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) at 1:200 dilution (shown in red). Secondary antibody only control: PBS instead of the primary antibody.



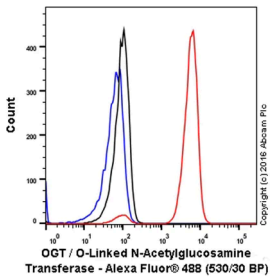
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody [EPR12713] (ab177941)

Immunohistochemical analysis of Paraffin-embedded sections human breast carcinoma tissue labelling OGT / O-Linked N-Acetylglucosamine Transferase with ab177941 at 1:2000 dilution (0.2 µg/ml), followed by a ready to use secondary Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Staining on human breast carcinoma tissue is observed. Counter stained with Haematoxylin. Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0). The immunostaining was performed on a Leica Biosystems BOND® RX instrument.



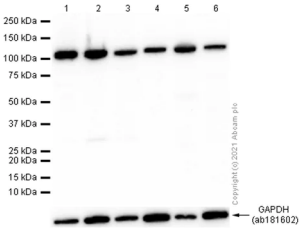
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody [EPR12713] (ab177941)

Immunohistochemical analysis of Paraffin-embedded sections human lung carcinoma tissue labelling OGT / O-Linked N-Acetylglucosamine Transferase with ab177941 at 1:2000 dilution (0.2 µg/ml), followed by a ready to use secondary Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Staining on human lung carcinoma tissue is observed. Counter stained with Haematoxylin. Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0). The immunostaining was performed on a Leica Biosystems BOND® RX instrument.



Flow Cytometry (Intracellular) - Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody [EPR12713] (ab177941)

Intracellular Flow Cytometry analysis of K-562 (Human chronic myelogenous leukemia lymphoblast) cells labeling OGT / O-Linked N-Acetylglucosamine Transferase with purified ab177941 at 1:40 dilution (10 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150081) (1/2000 dilution) was used as the secondary antibody. Rabbit monoclonal IgG (Black) was used as a isotype control. Cell without incubation with primary antibody and secondary antibody (Blue) were used as unlabeled control.



Western blot - Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody [EPR12713] (ab177941)

Blocking and diluting buffer and concentration: 5% NFDM/TBST. ab181602 was used as GAPDH loading control.
All lanes:
Western blot - Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody [EPR12713] (ab177941) at 1/10000 dilution

Lane 1:
A549 (Human lung carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 2:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate at 20 µg

Lane 3:
293T (Human embryonic kidney epithelial cell) whole cell lysate at 20 µg

Lane 4:
Mouse heart at 20 µg

Lane 5:
Mouse pancreas at 20 µg

Lane 6:
Rat heart at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 116 kDa

Observed band size: 110 kDa

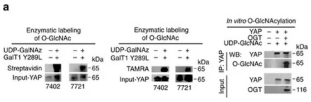


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OGT / O-Linked N-Acetylglucosamine Transferase Western blot staining using rabbit Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody

Western Blotting using Anti-OGT / O-Linked N-Acetylglucosamine Transferase antibody [EPR12713], ab177941. Publication image from Chen, Y. et al., 2017, Nat Commun, 28474680. Legend direct from paper.

YAP is O-GlcNAcylated by OGT at Thr241.(a) YAP O-GlcNAcylation was measured via HRP-labelled Streptavidin (left) and anti-TAMRA antibodies (middle) in Bel-7402 and SMMC-7721 cells. In vitro O-GlcNAcylation of YAP was measured by incubating purified YAP and OGT proteins with UDP-GlcNAc at 37 °C for 90 min before immunoprecipitation with anti-YAP antibodies, followed by western blot using an anti-O-GlcNAc antibody (right). (b) Enzymatic labelling of O-GlcNAc in WT and T241A YAP-FLAG proteins as analysed by anti-TAMRA antibodies and HRP-labelled Streptavidin in Bel-7402 and SMMC-7721 cells. (c) YAP-FLAG was immunoprecipitated by an anti-FLAG antibody in Bel-7402 and SMMC-7721 cells transfected with WT or T241A YAP-FLAG-expressing plasmids. Phosphorylation of YAP was detected using an anti-p-YAP antibody. (d) Mutation of Thr241 induced LATS1-YAP binding under stimulation of O-GlcNAcylation by combined treatment of GlcNAc (4 mM) and PuGNAc (25 μM). Expression plasmids for YAP-FLAG, WT or T241A were transfected into Bel-7402 and SMMC-7721 cells, and cells were treated as indicated for 24 h before analysis. YAP-FLAG was immunoprecipitated with anti-FLAG antibodies, and the association with LATS1 was measured using anti-LATS1 antibodies. (e) Mutation of Thr241 reduced YAP-promoted transformative phenotypes in vitro. Cell proliferation, colony formation capacity and Caspase 3/7 activities were measured with MTT-based assays, soft agar colony formation assays and Caspase 3/7 Glo luciferase assays, respectively, in Bel-7402 and SMMC-7721 cells expressing WT or T241A YAP-FLAG. Scale bar, 500 μm. (f) Mutation of Thr241 diminished YAP-promoted xenograft tumour formation in vivo. The tumour size was measured 72 days after injection of Bel-7402 or SMMC-7721 cells into nude mice. (g) Mutation of Thr241 reduced the half-life of YAP. YAP-FLAG (as indicated) was transfected into Bel-7402 and SMMC-7721 cells, and cells were harvested at the indicated time points after addition of CHX (50 μg ml−1). The expression of YAP-FLAG was normalized to that of GAPDH, and the ‘0 h' point was arbitrarily set to 100%. Representative images are shown, and the data are expressed as the means+s.d. from three independent experiments. **P<0.01 indicates statistical significance. The data from d–f were analysed by Student's t-test.

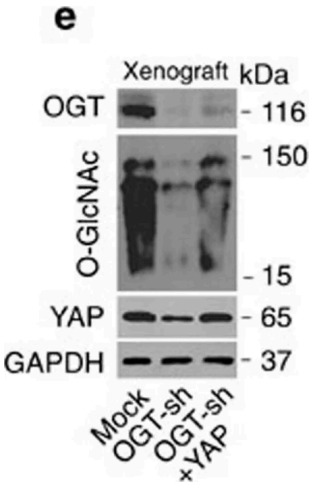


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O-GlcNAcylation of YAP stimulates tumorigenesis.(a–d) Ectopic expression of YAP rescued the diminished transformative phenotypes caused by OGT knockdown in vitro. The protein expression of OGT, O-GlcNAc, p-YAP and YAP in Bel-7402 and SMMC-7721 cells was measured by WB (a). Cell proliferation, colony formation capacity and Caspase 3/7 activities were measured with an MTT-based assay (b), soft agar colony formation assay (c) and Caspase 3/7 Glo luciferase assay (d), respectively, in Bel-7402 and SMMC-7721 cells under different treatments as indicated. Scale bar, 500 μm. (e,f) Ectopic expression of YAP rescued the xenograft tumour growth inhibited by OGT silencing in vivo. The protein expression of OGT, O-GlcNAc and YAP in xenografts was measured by WB (e). Tumour volumes were monitored for 36 days after subcutaneous injection of Bel-7402 cells into nude mice; n=5 per group (f). Representative IHC images of cleaved Caspase 3 and Ki67 staining in the xenografts formed in nude mice. Scale bar, 500 μm. Representative images from three independent experiments are shown (a–e). **P<0.01 indicates statistical significance. The data from b–d,f were analysed by one-way and two-way ANOVA, respectively.

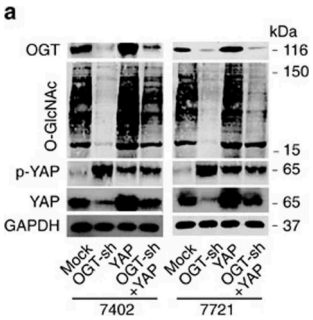


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