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KD-Validated Anti-OGT Rabbit Monoclonal Antibody

Rabbit monoclonal antibody
Catalog # AGI1140

Product Information

Application	WB, FC, ICC
Primary Accession	O15294
Reactivity	Rat, Human, Mouse
Clonality	Monoclonal
Isotype	Rabbit IgG
Clone Names	25GB2185
Calculated MW	116925
Gene Name	OGT
Aliases	OGT; O-Linked N-Acetylglucosamine (GlcNAc) Transferase; O-GLCNAC; HRNT1; OGT1; O-Linked N-Acetylglucosamine (GlcNAc) Transferase (UDP-N-Acetylglucosamine:Polypeptide-N-Acetylglucosaminyl Transferase); UDP-N-Acetylglucosamine--Peptide N-Acetylglucosaminyltransferase 110 KDa Subunit; UDP-N-Acetylglucosamine:Polypeptide-N-Acetylglucosaminyl Transferase; O-Linked N-Acetylglucosamine Transferase 110 KDa Subunit; O-GlcNAc Transferase Subunit P110; MGC22921; FLJ23071; Uridinediphospho-N-Acetylglucosamine:Polypeptide Beta-N-Acetylglucosaminyl Transferase; O-GlcNAc Transferase P110 Subunit; EC 2.4.1.255; EC 2.4.1.186; HINCUT-1; EC 2.4.1; XLID106; MRX106
Immunogen	A synthesized peptide derived from human OGT/O-Linked N-Acetylglucosamine Transferase

Additional Information

Gene ID	8473
Other Names	UDP-N-acetylglucosamine--peptide N-acetylglucosaminyltransferase 110 kDa subunit, 2.4.1.255, O-GlcNAc transferase subunit p110, O-linked N-acetylglucosamine transferase 110 kDa subunit, OGT, OGT {ECO:0000303|PubMed:11773972, ECO:0000312|HGNC:HGNC:8127}

Protein Information

Name	OGT {ECO:0000303|PubMed:11773972, ECO:0000312|HGNC:HGNC:8127}
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).

Cellular Location

Nucleus. Cytoplasm. Note=Predominantly localizes to the nucleus (PubMed:26678539). Translocates into the nucleus via association with importin KPNA1 (PubMed:27713473) [Isoform 3]: Cytoplasm. Nucleus. Cell membrane {ECO:0000250|UniProtKB:P56558}. Mitochondrion membrane {ECO:0000250|UniProtKB:P56558}. Cell projection {ECO:0000250|UniProtKB:P56558}. Note=Mostly in the nucleus. Retained in the nucleus via interaction with HCFC1 (PubMed:21285374). After insulin induction, translocated from the nucleus to the cell membrane via phosphatidylinositide binding. Colocalizes with AKT1 at the plasma membrane. TRAK1 recruits this protein to mitochondria. In the absence of TRAK1, localizes in cytosol and nucleus (By similarity) {ECO:0000250|UniProtKB:P56558, ECO:0000269|PubMed:21285374}

Tissue Location

Highly expressed in pancreas and to a lesser extent in skeletal muscle, heart, brain and placenta. Present in trace amounts in lung and liver.

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