abcam

ab2386

Anti-Transglutaminase 2 antibody [CUB 7402]

Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386) is a mouse monoclonal antibody detecting Transglutaminase 2 in **Western Blot, Flow Cytometry, IHC-P, ICC/IF**. Suitable for **Cat, Dog, Guinea pig, Human, Mouse, Rabbit**.

- KO validated for confirmed specificity
- Over 40 publications
- Trusted since 2002

KO Validated

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.3 - 7.5 Preservative: 0.05% Sodium azide Constituents: 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Native Full Length Protein corresponding to Cavia cutleri Protein-glutamine gamma-glutamyltransferase 2. Database link P08587
Clone number	CUB 7402
Purification technique	Affinity purification Protein G
Epitope	Epitope mapping for this antibody is amino acid 447-478
Light chain type	unknown

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1/10
Notes	Methanol fixed cells. ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Predicted

Species	Cat, Dog, Rabbit, Mouse, Guinea pig, Rat
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1 µg/mL
Notes	-

Predicted

Species	Cat, Dog, Rabbit, Mouse, Guinea pig, Rat
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/500
Notes	-

Expected

Species	Rat, Mouse, Guinea pig, Dog, Cat, Rabbit
Dilution info	Use at an assay dependent concentration.
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/50 - 1/75
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Predicted

Species	Cat, Dog, Rabbit, Mouse, Guinea pig, Rat
Dilution info	-
Notes	-

Target data

See full target information Protein-glutamine gamma-glutamyltransferase 2

Function

Calcium-dependent acyltransferase that catalyzes the formation of covalent bonds between peptide-bound glutamine and various primary amines, such as gamma-amino group of peptide-bound lysine, or mono- and polyamines, thereby producing cross-linked or aminated proteins, respectively (PubMed:23941696, PubMed:31991788, PubMed:9252372). Involved in many biological processes, such as bone development, angiogenesis, wound healing, cellular differentiation, chromatin modification and apoptosis (PubMed:1683874, PubMed:27270573, PubMed:28198360, PubMed:7935379, PubMed:9252372). Acts as a protein-glutamine gamma-glutamyltransferase by mediating the cross-linking of proteins, such as ACO2, HSPB6, FN1, HMGB1, RAP1GDS1, SLC25A4/ANT1, SPP1 and WDR54 (PubMed:23941696, PubMed:24349085, PubMed:29618516, PubMed:30458214). Under physiological conditions, the protein cross-linking activity is inhibited by GTP; inhibition is relieved by Ca(2+) in response to various stresses (PubMed:18092889, PubMed:7592956, PubMed:7649299). When secreted, catalyzes cross-linking of proteins of the extracellular matrix, such as FN1 and SPP1 resulting in the formation of scaffolds (PubMed:12506096). Plays a key role during apoptosis, both by (1) promoting the cross-linking of cytoskeletal proteins resulting in condensation of the cytoplasm, and by (2) mediating cross-linking proteins of the extracellular matrix, resulting in the irreversible formation of scaffolds that stabilize the integrity of the dying cells before their clearance by

phagocytosis, thereby preventing the leakage of harmful intracellular components (PubMed:7935379, PubMed:9252372). In addition to protein cross-linking, can use different monoamine substrates to catalyze a vast array of protein post-translational modifications: mediates aminylation of serotonin, dopamine, noradrenaline or histamine into glutamine residues of target proteins to generate protein serotonylation, dopaminylation, noradrenalinylation or histaminylation, respectively (PubMed:23797785, PubMed:30867594). Mediates protein serotonylation of small GTPases during activation and aggregation of platelets, leading to constitutive activation of these GTPases (By similarity). Plays a key role in chromatin organization by mediating serotonylation and dopaminylation of histone H3 (PubMed:30867594, PubMed:32273471). Catalyzes serotonylation of 'Gln-5' of histone H3 (H3Q5ser) during serotonergic neuron differentiation, thereby facilitating transcription (PubMed:30867594). Acts as a mediator of neurotransmission-independent role of nuclear dopamine in ventral tegmental area (VTA) neurons: catalyzes dopaminylation of 'Gln-5' of histone H3 (H3Q5dop), thereby regulating relapse-related transcriptional plasticity in the reward system (PubMed:32273471). Regulates vein remodeling by mediating serotonylation and subsequent inactivation of ATP2A2/SERCA2 (By similarity). Also acts as a protein deamidase by mediating the side chain deamidation of specific glutamine residues of proteins to glutamate (PubMed:20547769, PubMed:9623982). Catalyzes specific deamidation of protein gliadin, a component of wheat gluten in the diet (PubMed:9623982). May also act as an isopeptidase cleaving the previously formed cross-links (PubMed:26250429, PubMed:27131890). Also able to participate in signaling pathways independently of its acyltransferase activity: acts as a signal transducer in alpha-1 adrenergic receptor-mediated stimulation of phospholipase C-delta (PLCD) activity and is required for coupling alpha-1 adrenergic agonists to the stimulation of phosphoinositide lipid metabolism (PubMed:8943303). Isoform 2. Has cytotoxic activity: is able to induce apoptosis independently of its acyltransferase activity.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Storage information	Avoid freeze / thaw cycle

Notes

What is this antibody validated in?
Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386) is a mouse monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Flow Cyt), Immunohistochemistry (IHC-P),

Immunocytochemistry/immunofluorescence (ICC/IF) in Cat, Dog, Guinea pig, Human, Mouse, Rabbit samples.

What is the molecular weight of Transglutaminase 2?
Anti-Transglutaminase 2 [CUB 7402] (ab2386) specifically detects a band for Transglutaminase 2 (UniProt: P08587) at a molecular weight of 77kDa.

Trusted by the scientific community
Anti-Transglutaminase 2 [CUB 7402] (ab2386) was first used in a scientific publication in 2002 and has been cited over 40 times in peer-reviewed journals.

Reviewed by scientists
Anti-Transglutaminase 2 [CUB 7402] (ab2386) has over 5 independent reviews from customers.

Specificity confirmed
The specificity of Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386) has been confirmed by Western blot testing in Transglutaminase 2 Knockout A549 cell line, ab261876.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Transglutaminase 2 also known as TG2 or tissue transglutaminase is an enzyme with a mass of approximately 74 kDa. It catalyzes the formation of covalent bonds by crosslinking glutamine residues and lysine residues in proteins. This enzyme is widely expressed in various tissues including the liver heart and lungs. It can act as a GTPase a kinase and a protein disulfide isomerase highlighting its multifunctional nature. Additionally transglutaminase 2 associates with cell membranes cytoskeleton and extracellular matrix indicating its versatile involvement in cellular processes.
Biological function summary	Transglutaminase 2 plays roles in cell adhesion wound healing and the immune response. It mediates extracellular matrix stabilization through crosslinking structural proteins which is critical for tissue repair. The enzyme does not typically form a stable part of a large complex but interacts with fibronectin as a binding partner highlighting its role in cellular adhesion and migration. The enzymatic activity of transglutaminase 2 helps maintain tissue integrity by modifying extracellular and intracellular proteins.
Pathways	Transglutaminase 2 contributes significantly to the integrin-mediated signaling pathway and the apoptosis pathway. It assists in the modulation of cell-matrix interactions by crosslinking matrix proteins which is important for integrin signaling. During apoptosis transglutaminase 2 promotes cellular processes that lead to cell death via its involvement in nuclear condensation and DNA fragmentation. In these pathways proteins such as fibronectin and integrins interact with transglutaminase 2 facilitating its regulatory functions.
Associated diseases and disorders	Transglutaminase 2 is associated with celiac disease and neurodegenerative disorders like Huntington's disease. Its autoantigenic properties make it a target in celiac disease where antibodies against transglutaminase 2 play a role in the pathology by affecting intestinal tissue. In Huntington's disease transglutaminase

2 contributes to the formation of protein aggregates which are toxic to neurons. This enzyme's interactions with proteins such as gliadin in celiac disease and huntingtin in Huntington's disease are central to its pathogenic mechanism.

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

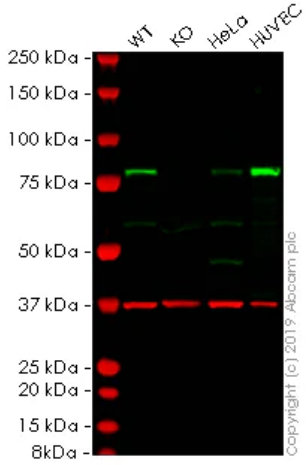
We do not recommend this combination. It is not covered by our product promise.

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.

6 product images



Western blot - Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386)

Transglutaminase 2 Western blot staining using mouse Anti-Transglutaminase 2 antibody

Lanes 1 - 4: Merged signal (red and green). Green - ab2386 observed at 77 kDa. Red - loading control, ab181602, observed at 37 kDa.
ab2386 was shown to recognize in wild-type A549 cells as signal was lost at the expected MW in TGM2 knockout cell line ab261876 (knockout cell lysate ab261685). Additional cross-reactive bands were observed in the wild-type and knockout samples. Wild-type and TGM2 knockout samples were subjected to SDS-PAGE. The membrane was blocked with 3% milk. ab2386 and ab181602 (Rabbit anti-GAPDH loading control) were incubated overnight at 4°C at 1 ug/ml and 1/20000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preabsorbed ab216772 and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preabsorbed ab216777 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386) at 1 µg/mL

Lane 1:
Wild-type A549 (Human lung carcinoma cell line) whole cell lysate at 20 µg

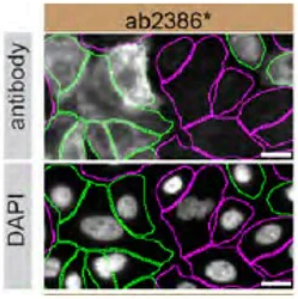
Lane 2:
Western blot - Human TGM2 (Transglutaminase 2) knockout A549 cell lysate (ab261685)

Lane 3:
HeLa (Human epithelial cell line from cervix adenocarcinoma) whole cell lysate at 20 µg

Lane 4:
HUVEC (Human umbilical vein endothelial cell line) whole cell lysate at 20 µg

Predicted band size: 77 kDa

Observed band size: 77 kDa

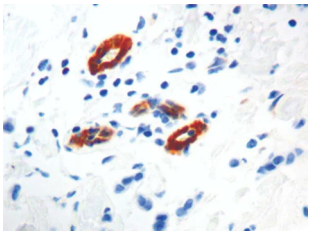


Immunocytochemistry/ Immunofluorescence - Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386)

Transglutaminase 2 Immunocytochemistry/ Immunofluorescence staining of A549 cells using mouse Anti-Transglutaminase 2 antibody

ab2386 was shown to react with TGM2 in wild-type A549 cells in immunocytochemistry with loss of signal observed in TGM2 knockout cell line ab261876. Wild-type and knockout cells were mixed and pelleted at a 1:1 ratio on coverslips. The cells were fixed with 4% paraformaldehyde (15 min) then permeabilized with 0.1% Triton X-100 (10min) and then blocked with 1x PBS, 0.01% Triton X-100, 5% BSA, 5% NGS. The cells were then incubated with ab2386 at 1/1000 dilution overnight at 4°C followed by a further incubation at room temperature for 1h with a goat anti-rabbit secondary antibody to (Alexa Fluor® 555) at 0.5 µg/ml. Acquisition of the green (wild-type), red (antibody staining) and far-red (knockout) channels was performed. Representative grayscale images of the red channel are shown. Wild-type and knockout cells are outlined with yellow and magenta dashed line, respectively. Schematic representation of the mosaic strategy used is shown on the bottom-right panel. Image was acquired with a Zeiss(LSM-880).

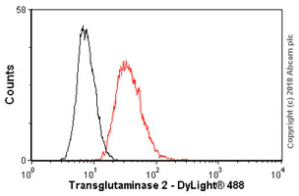
These data were provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386)

Transglutaminase 2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Transglutaminase 2 antibody

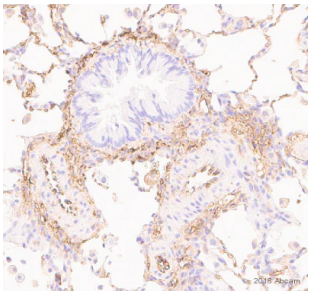
Immunohistochemical analysis of human breast carcinoma tissue labeling Transglutaminase 2 with ab2386. Tissue was fixed with paraformaldehyde; antigen retrieval was by heat mediation in a citrate buffer. Samples were incubated with primary antibody (1/50) for 30 minutes at 22°C.



Flow Cytometry - Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386)

Transglutaminase 2 Flow Cytometry staining using mouse Anti-Transglutaminase 2 antibody

Overlay histogram showing HCT116 cells stained with ab2386 (red line). The cells were fixed with methanol (5 min) and incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab2386, 1/10 dilution) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a decreased signal in HCT116 cells fixed with 4% paraformaldehyde (10 min) used under the same conditions.

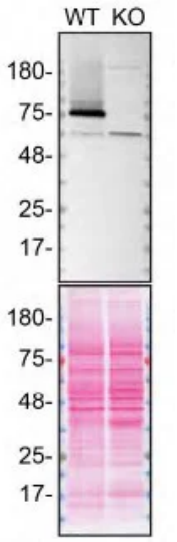


This image is courtesy of an anonymous customer review

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386)

Transglutaminase 2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Transglutaminase 2 antibody

Immunohistochemical analysis of (IHC-P - paraformaldehyde-fixed, paraffin-embedded sections) rat lung tissue labeling Transglutaminase 2 with ab2386. Tissue was fixed with formaldehyde and blocked with 1% casein in PBS for 15 minutes at room temperature; antigen retrieval was by heat mediation in a citrate buffer, pH 6. Samples were incubated with primary antibody (1/200 in TBS + BSA) for 20 minutes. ab98782 was used as the secondary antibody at a dilution of 1/400.



Western blot - Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386)

Transglutaminase 2 Western blot staining using mouse Anti-Transglutaminase 2 antibody

ab2386 was shown to react with TGM2 in wild-type A549 cells in Western blot with loss of signal observed in TGM2 knockout cell line ab261876. Wild-type A549 and TGM2 knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in 5% milk in TBST for 1 hr before incubation with ab2386 overnight at 4 °C at a 1/500 dilution. Blots were incubated with secondary antibodies at 0.2 µg/mL before imaging.

These data were provided by YCharOS Inc., an open science company with the mission of characterizing commercially available antibody reagents for all human proteins. Abcam and YCharOS are working together to help address the reproducibility crisis by enabling the life science community to better evaluate commercially available antibodies.
All lanes:
Western blot - Anti-Transglutaminase 2 antibody [CUB 7402] (ab2386) at 1/500 dilution

Lane 1:
Wild-type A549 lysate at 40 µg

Lane 2:
TGM2 knock-out A549 lysate at 40 µg

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