PE anti-TGM2 Antibody

Catalog# / Size	641353 / 25 tests 641354 / 100 tests
Clone	4G3
Regulatory Status	RUO
Other Names	TG2, TTG, Tissue Transglutaminase, tTG, Transglutaminase II, TGase II, Protein-Glutamine Deamidase, Transglutaminase C
Isotype	Mouse IgG1, κ
Description	Protein-glutamine gamma-glutamyltransferase 2, also known as TGM2, is a multifunctional enzyme involved in various biological processes, including cell growth, differentiation, apoptosis, and tissue repair. It catalyzes protein crosslinking by bonding glutamine and lysine residues. It also functions as a deamidase, GTPase, and protein disulfide isomerase. In macrophages, TGM2 expression is induced by Th2 cytokines and plays an important role in M2 differentiation. These M2 macrophages are involved in anti-inflammatory responses, tissue repair, and remodeling. In addition, TGM2 helps in stabilizing the extracellular matrix and promoting cell adhesion, which are crucial for the proper functioning and differentiation of these macrophages. Dysregulation of TGM2 has been linked to several diseases, such as cancer, neurodegenerative disorders, and fibrosis. Overexpression of TGM2 is associated with tumor progression and chemoresistance, while its role in neurodegeneration involves the formation of protein aggregates.

Product Details

Verified Reactivity	Human, Mouse
Antibody Type	Monoclonal
Host Species	Mouse
Immunogen	Purified human erythrocyte Transglutaminase 2
Formulation	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide and BSA (origin USA)
Preparation	The antibody was purified by affinity chromatography and conjugated with PE under optimal conditions.
Concentration	Lot-specific (to obtain lot-specific concentration and expiration, please enter the lot number in our Certificate of Analysis online tool.)
Storage & Handling	The antibody solution should be stored undiluted between 2°C and 8°C, and protected from prolonged exposure to light. **Do not freeze**.
Application	ICFC - Quality tested
Recommended Usage	Each lot of this antibody is quality control tested by intracellular flow cytometry using our True-Phos™ Perm Buffer in Cell Suspensions Protocol. For flow cytometric staining, the suggested use of this reagent is 5 µL per million cells in 100 µL staining volume or 5 µL per 100 µL of whole blood. It is recommended that the reagent be titrated for optimal performance for each application.
Excitation Laser	Blue Laser (488 nm) Green Laser (532 nm)/Yellow-Green Laser (561 nm)
Additional Product Notes	When using this antibody in intracellular flow cytometry (ICFC) we recommend True-Phos™ Perm Buffer (Cat. No. 425401).
RRID	AB_3720592 (BioLegend Cat. No. 641353) AB_3720592 (BioLegend Cat. No. 641354)

Antigen Details

Structure	TGM2 is a 686 amino acid length protein with a molecular weight of approximately 77 kDa.
Distribution	TGM2 is predominantly located in the cytoplasm, but it is also present in the plasma membrane, mitochondria, and nucleus. It is also secreted to the ECM.
Function	• Protein Crosslinking: catalyzes the formation of covalent bonds between glutamine and lysine residues in proteins • Cell Adhesion: facilitates cell-matrix interactions, aiding in tissue repair and wound healing • Apoptosis: involved in programmed cell death, contributing to cellular homeostasis • Signal Transduction: acts as a GTPase, participating in intracellular signaling pathways • Extracellular Matrix Stabilization: helps in maintaining the structural integrity of the extracellular matrix
Interaction	• ACO2 (Aconitase 2): involved in the citric acid cycle • HSPB6 (Heat Shock Protein Beta-6): plays a role in muscle function and stress response • FN1 (Fibronectin 1): important for cell adhesion and wound healing • HMGB1 (High Mobility Group Box 1): functions in DNA binding and repair • RAP1GDS1 (RAP1 GTPase-GDP Dissociation Stimulator 1): involved in signal transduction • SLC25A4/ANT1 (Solute Carrier Family 25 Member 4/Adenine Nucleotide Translocator 1): plays a role in mitochondrial function • SPP1 (Secreted Phosphoprotein 1): involved in bone remodeling and immune response • WDR54 (WD Repeat Domain 54): functions are less well characterized
Cell Type	Endothelial cells, Epithelial cells, Leukocytes, Macrophages
Biology Area	Adaptive Immunity, Cancer Biomarkers, Cell Biology, Immuno-Oncology, Immunology, Innate Immunity, Stem Cells
Molecular Family	Enzymes and Regulators
Antigen References	1. Tatsukawa H, et al. 2021. Cells. 10(7):1842 2. Jiang SH, et al. 2021. J Cell Sci. 134(11) 3. Zhang, et al. 2023. Cellular Oncology. 46:1473 4. Chrobok NL. et al. 2018. Plos One. 13(4)
Regulation	• Calcium Ions: activation is highly dependent on the presence of calcium ions • GTP/GDP Binding: GTP binding inhibits its transamidation activity, while GDP binding can activate it • Post-Translational Modifications: phosphorylation and other modifications can influence its activity and localization • Cytokines: expression can be upregulated by cytokines such as IL-4 and IL-13, especially in macrophages
Gene ID	7052

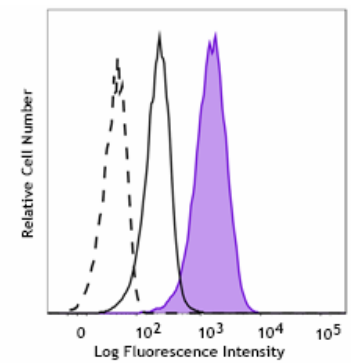
Related Protocols

- Intracellular Staining With True-Phos™ Perm Buffer in Cell Suspensions Protocol
- Intracellular Staining With True-Phos™ Perm Buffer in Whole Blood

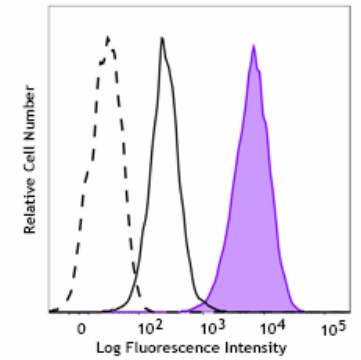
Other Formats

PE anti-TGM2, Alexa Fluor® 647 anti-TGM2, Purified anti-TGM2

Product Data



PC-3 cells (high expression control, filled histogram) and HaCat cell (low expression control, open histogram) were fixed and permeabilizated using True-Phos™ Perm Buffer (Cat. No. 425401) and then intracellular stained with PE anti-TGM2 (clone 4G3) or PE Mouse IgG1, κ Isotype control (dashed histogram) (Cat. No. 400111).



Human PBMC-derived macrophages untreated (low expression control, open histogram) or treated with recombinant human IL-4 (Cat. No. 574016) and recombinant human IL-13 (Cat. No. 571116) (positive control, filled histogram) to induce M2 differentiation (positive control, filled histogram), were fixed and permeabilized using True-Phos™ Perm Buffer Set (Cat. No. 425401) and intracellularly stained with PE anti-TGM2 (clone 4G3) or PE Mouse IgG1, κ isotype control (dashed histogram) (Cat No. 400111).

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