C-Term GRP Polyclonal Antibody

Rabbit polyclonal antibody against total GRP (all carboxylation forms)

Product Snapshot

Catalog #	PA:T50
Target	Total GRP (all forms)
Host / Clonality	Rabbit / Polyclonal
Reactivity	Multi-species (fish to mammals)
Applications	Western blot, immunolocalization, immunofluorescence, flow cytometry, immunogold electron microscopy
Quantity	50 µg (lyophilized)
Storage	-20°C (short-term), -80°C (long-term)

> **Total GRP, all forms:** This antibody recognizes GRP independently of carboxylation state and reacts across species, from fish to mammals. It shows no significant cross-reactivity with other Gla-containing proteins such as MGP and osteocalcin.

Background

Human GRP (Gla-rich Protein) is a vitamin K-dependent protein with 15 putative γ-carboxyglutamic acid (Gla) residues. GRP functions as an inhibitor of calcification in the cardiovascular and articular systems and acts as an anti-inflammatory agent in several cell types. GRP is present in serum and accumulates at sites of pathological calcification; robust total-GRP detection across species supports a broad range of research models and applications.

Applications & Use Cases

This antibody is used for the detection of total GRP (all carboxylation forms) by:

- Detecting, localizing and characterizing total GRP protein forms across tissues, cells, nanoparticles, extracellular vesicles and protein extracts

Not recommended for:

- *Discriminating γ-carboxylated from undercarboxylated GRP (use conformational monoclonals MA:C50 or MA:UC50)*
- *Absolute quantification without a matched GRP standard*

Specifications

Immunogen: Synthetic peptide corresponding to the conserved C-terminus of GRP.

Specificity: Reacts with GRP from multiple species, from fish to mammals. No significant cross-reactivity with other Gla-containing proteins, including MGP and osteocalcin.

Validation: Validated by Western blot and immunolocalization in tissues from multiple species, including human, rat, pig and sturgeon (see Selected References).

Purity: Affinity purified.

Cross-Reactivity

Confirmed reactivity by species:

Species	Validated by
Sturgeon	Western blot (purified GRP protein)
Rat	Western blot (skin); immunolocalization (several tissues)
Mouse	Western blot (skin)
Pig	Western blot (skin, elastic cartilage)
Rabbit	Western blot (skin)
Human	Western blot (vascular system); immunolocalization (several tissues)

Usage

Reconstitution: Add 50 µL sterile protease-free water. Reconstitute by gentle rotation at 4°C for at least 12 hours.

Recommended dilutions (optimize for your application):

Application	Dilution
Western Blot	5 µg/ml
Immunolocalization	5 µg/ml

Storage & Handling

Shipment: Room temperature (lyophilized).

Storage: After reconstitution, store at -20°C for up to two months. For long-term storage, -80°C is recommended. Avoid repeated freeze-thaw cycles.

Selected References

1. Viegas CS, Cavaco S, Neves PL, Ferreira A, João A, Williamson MK, Price PA, Cancela ML, Simes DC (2009). “Gla-rich protein (GRP) is a novel vitamin K dependent protein present in serum and accumulated at sites of pathological calcifications”. Am J Pathol. 175(6):2288-2298. doi:10.2353/ajpath.2009.090474.
2. Viegas CS, Rafael MS, Enriquez JL, Teixeira A, Vitorino R, Luís IM, Costa RM, Santos S, Cavaco S, Neves J, Macedo AL, Willems BA, Vermeer C, Simes DC (2015). “Gla-rich protein acts as a calcification inhibitor in the human cardiovascular system”. Arterioscler Thromb Vasc Biol. 35(2):399-408. doi:10.1161/ATVBAHA.114.304823.
3. Cavaco S, Viegas CSB, Rafael MS, Ramos A, Magalhães J, Blanco FJ, Vermeer C, Simes DC (2016). “Gla-rich protein is involved in the cross-talk between calcification and inflammation in osteoarthritis”. Cell Mol Life Sci. 73(5):1051-1065. doi:10.1007/s00018-015-2033-9.
4. Viegas CSB, Costa RM, Santos L, Videira PA, Silva Z, Araújo N, Macedo AL, Matos AP, Vermeer C, Simes DC (2017). “Gla-rich protein function as an anti-inflammatory agent in monocytes/macrophages: implications for calcification-related chronic inflammatory diseases”. PLoS ONE 12(5):e0177829. doi:10.1371/journal.pone.0177829.
5. Willems BA, Furmanik M, Caron M, Chatrou ML, Kusters D, Welting T, Stock M, Rafael MS, Viegas CS, Simes DC, Vermeer C, Reutelingsperger C, Schurgers L (2018). “Ucma/GRP inhibits phosphate-induced vascular smooth muscle cell calcification via SMAD-dependent BMP signalling”. Sci Rep. 8(1):4961. doi:10.1038/s41598-018-23353-y.
6. Viegas CSB, Santos L, Macedo AL, Matos AP, Silva AP, Neves PL, Staes A, Gevaert K, Morais R, Vermeer C, Schurgers L, Simes DC (2018). “Chronic kidney disease circulating calciprotein particles and extracellular vesicles promote vascular calcification: a role for GRP (Gla-rich protein)”. Arterioscler Thromb Vasc Biol. 38(3):575-587. doi:10.1161/ATVBAHA.117.310578.
7. Viegas CSB, Araújo N, Carreira J, Pontes JF, Macedo AL, Vinhas M, Moreira AS, Faria TQ, Grenha A, de Matos AA, Schurgers L, Vermeer C, Simes DC (2022). “Nanoencapsulation of Gla-Rich Protein (GRP) as a novel approach to target inflammation”. Int J Mol Sci. 23(9):4813. doi:10.3390/ijms23094813.

8. Viegas C, Carreira J, Maia TM, Macedo AL, Matos AP, Neves J, Simes D (2024). “Gla-rich protein (GRP) mediates VSMCs osteogenic differentiation, extracellular vesicle (EV) calcification propensity and immunomodulatory properties”. Int J Mol Sci. 25(22):12406. doi:10.3390/ijms252212406.
9. Viegas C, Pichard S, Carreira J, Ova A, Troffer-Charlier N, Maia TM, Edelweiss E, Macedo AL, Matos A, Faria TQ, Calado SM, Monico C, Devos S, Impens F, Schaeffer-Reiss C, Cianférani S, Peixoto C, Poterszman A, Simes D (2026). “Bioengineered baculovirus-derived extracellular vesicles loaded with of γ-carboxylated Gla-rich protein: dual modulation of inflammation and vascular calcification”. Biomater Adv. 184:214833. doi:10.1016/j.bioadv.2026.214833.

Related Products

Catalog #	Product	Use Case
MA:C50	Monoclonal cGRP Antibody	Detect γ-carboxylated GRP
MA:UC50	Monoclonal ucGRP Antibody	Detect undercarboxylated GRP

Based on PCT/PT2009000046
GenoGla Diagnostics | www.genogla.com | genogla@genogla.com
CRIA - University of Algarve, Campus de Gambelas, 8005-139 Faro, Portugal