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### Particulate Guanylyl Cyclase selective antibodies

#### Anti-Particulate Guanylyl cyclase G antibodies (PGCG-700P and PGCG-701AP)

Cyclic GMP (cGMP), a key messenger in several signal transduction pathways, the intracellular levels of cGMP are maintained by the activity of opposing enzymes: synthesizing guanylyl cyclases (GC) and hydrolyzing phosphodiesterases (PDEs). The synthesizing enzymes (GCs) are found in two forms: cytosolic (soluble) and membrane-bound (particulate), while they share similar structural characteristics, they differ in their mechanisms of physiological regulations. Most importantly, sGC contains a heme group and binds NO that activates the enzyme, while particulate GC is stimulated by natriuretic peptides. Membrane-bound guanylyl cyclases (GCs) are peptide hormone receptors whereas the cytosolic isoforms are receptors for nitric oxide. Particulate GC (PGCs) have 7 different isoforms, PGC-A through PGC-G and are expressed in most tissues in isoform specific manner (See Table 1). Plasma membrane forms of guanylyl cyclase have been shown to function as natriuretic peptide receptors. In response to G-protein coupled receptor stimulation, the cGMP can be produced from GTP by either cytoplasmic, soluble guanylate cyclase (sGC) are heterodimers ( $\alpha$  &  $\beta$  polypeptide chains), that are stimulated by nitric oxide and carbon monoxide or by particulate membrane-bound guanylyl cyclases which are activated by a complex mechanism by natriuretic peptides. There is significant structural homology among various PGCs, there is a large N-terminal extracellular domain (ECD), a single TMD and a large intracellular domain with protein kinase activity (KLD), a C-terminal catalytic domain (CD) and in between is a dimerization domain (DD). Two cDNA clones isolated from rat eye cDNA library encodes for two membranes associated guanylate cyclase E and F. The expression of PGC-F is confined to eye, none of the ligand known to stimulate other guanylate cyclases failed to stimulate PGC-E and F subtype. Thus both PGC-E and PGC-F are considered as orphan receptors. The PGC-F structure resembles most closely with other sensory PGC isoforms, the conservations are in the intracellular kinase like and catalytic domains, and is most divergent at N and C-terminal regions. The PGC-F is expressed only in retina (1). It is suggested that membrane receptor GCs may be involved in the control of inner ear electrolyte and fluid composition whereas NO-stimulated GC isoforms mainly participate in the regulation of blood flow and supporting cell physiology (2). At present PGC-E and PGC-F ligands are not known and they fall under Orphan Receptor category.

#	Type	Tissue Distribution of Particulate GC
1	PGC-A	Ubiquitous, B, K, L, T, H, Immune system
2	PGC-B	Majority of tissues, B, K, L, S, T, E
3	PGC-C	Intestinal track, marker of Colorectal cancer
4	PGC-D	Mainly in Olfactory cells
5	PGC-E	Photoreceptor cells (retinal GC1 & ret GC2)
6	PGC-F	Pineal gland of rat, chicks and bovine
7	PGC-G	Lung, intestine and skeletal muscle

B= brain; E= eye; H= heart; K= kidney; L= liver; S= spleen

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The PGC-G-selective antibodies were prepared against a unique peptide selective for only PGCG that maps at or close to the C-terminal region of the protein. The PGC-G antibodies are affinity purified against immobilized antigen based affinity chromatography which yielded epitope-specific antibodies. The PGC-G antibodies label a approximately 120 kDa protein in our PC-PGCG sample. Anti-PGC-G-selective antibodies are also available in affinity-purified form for confocal, WB, IHC analyses. *FabGennix Int. Inc.* will also conjugate antibodies with fluorescent probes upon request at extra charge.

*FabGennix Inc.* also provides antibodies to other family members of the particulate GC (PGA, B, C, E, and F) and to various adenylate cyclases (AC-1 through 9). *FabGennix Inc.* employs cyclic peptide methodology for generating antibodies, which results in higher titer and specificity (6). *FabGennix, Inc.*, will also provide Western blot positive controls for most of these antibodies in ready-to-use buffer for easy identification of respective proteins. Limited quantities of antigens are also available for blocking studies. Please enquire for their availability before ordering.

Catalog #	Host Species	Nature	Cross reactivity	Quantity	Price
PGCG-700P	Rabbit	Affinity purified Antibody	R, M, H	100 $\mu$ l	205
PGCG-701AP	Rabbit	Affinity purified Antibody	R, M, H	100 $\mu$ g	225
P-PGCG	Peptide	Blocking antigenic peptide	n/a	250 $\mu$ g	75
PC-PGCG	Controls	WB Positive control	R	5 appl	165
PGC-Sampler	Rabbit	Affinity purified PGCG Antibody	R, M, H	50 $\mu$ g	250 ul

R = rat; M = mouse; H = human; C = chicken; monk = monkey ; \* not all variants are labeled equally

**Immunogen:** Synthetic peptide for particulate guanylyl cyclase G. All peptides were amidated for conjugation.

**Concentration:** PGCG-701AP 0.25-1.2 mg/ml of antibody stabilization buffer

**Applications:** PGCG-701AP is tested for WB application at 1:200 dilution. Other applications for this antibody has not been tested. WB: > 1:200; IMM & i.p pull-down assays: n.d; IHC n.d (Antibody dilutions for this antibody is for reference only, investigators are expected to determine the optimal conditions)

**Protocols:** Standard protocol for various applications (WB, IHC and IMM) for this antibody can be obtained by calling tech support team at 318 219 1123. FGI strongly recommends investigators to optimize conditions for use of this antibody.

#### References:

1. Yang R. B., Foster D. C., Gabers. D. L., Fulle. H. J. Proc. Natl. Acad. Sci. USA 92, 602-606, 1995.

\* For users who may require large amounts of PGCG-700P or PGCG-701AP, please enquire about bulk material discounts.

This Product is for Research Use Only and is NOT intended for use in humans or clinical diagnosis.

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