COSMO BIO CO., LTD.
Inspiration for Life Science

MONOCLONAL ANTIBODY

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Catalog No. PRPG-VS-M01

Anti- Versican [CSPG2] (5C12)

BACKGROUND

Versican, originally also known as PG-M, and encoded by the VCAN/CSPG2 gene, is a large extracellular matrix chondroitin sulfate proteoglycan ubiquitously expressed in interstitial matrices of the human body including that of brain. It was first isolated from the bovine aorta by Dick Heinegard's and Anders Malmstrom's groups (1982) and shortly after isolated from the chick embryonic limbs by Koji Kimata's group (1986). Cloning of the human VCAN/CSPG2 gene was accomplished in 1989 by Zimmermann and Ruoslahti, who also cognated the name *versican* in recognition of its versatile modular structure.*

Product type	Primary antibodies
Immunogen	Versican-enriched proteoglycan preparation from bovine aorta
Rased in	Mouse
Myeloma	-
Clone number	5C12
Isotype	IgM
Host	-
Source	Hybridoma cell culture
Purification	-
Form	Liquid
Storage buffer	Supernatant supplemented with 0.05% NaN3
Concentration	ND
Volume	2 mL
Label	Unlabeled
Specificity	Versican V0, V1 and V2 isoforms (V3 isoform reactivity not ascertained)
Cross reactivity	Human, Bovine Other species have not been tested.
Storage	Store at 4°C for short-term storage and -20°C for prolonged storage Aliquot to avoid cycles of freeze / thaw.
Other	**Data Link** : UniProtKB/Swiss-Prot P81282 (CSPG2_BOVIN)

Application notes WB, IHC(PFA-F), ELISA

Recommended dilutions

- Western blotting : 1/20 - 1/60
  Banding pattern depends upon the isoforms and is often complex. In the intact forms, i.e. without removal of GAGs, V0, V1 and V2 do not enter acrylamide gels and therefore agarose gels are recommended. Following chondroitinase-digestion and extensive enzymatic deglycosylation, most isoforms still show complex, smeared banding patterns.
- Immunohistochemistry : 1/25 - 1/75 (PFA-frozen sections)
  <Staining Pattern>
  mAb 5C12 stains ubiquitously connective tissue ECMs and particularly concentrates in vascular structures. Chondroitinase ABC pre-digestion of the sections may affect the staining pattern
- ELISA : 1/50 - 1/150

Other applications have not been tested.
Optimal dilutions/concentrations should be determined by the end user.

References

1) Mazzucato, M., *et al.*, 2002. Vascular PG-M/versican variants promote platelet adhesion at low shear rates and cooperate with collagens to induce aggregation. *FASEB J.* 16, 1903-1916.
2) Cattaruzza S, *et al.*, 2002. Distribution of PG-M/versican variants in human tissues and de novo expression of isoform V3 upon endothelial cell activation and neoangiogenesis. *J.Biol.Chem.*277, 47626-47635.
3) Cattaruzza S, Perris R. 2005. Proteoglycan control of cell movement during wound healing and cancer. *Matrix Biol.* 24, 400-417.

ANTIBODY CHARACTERIZATION

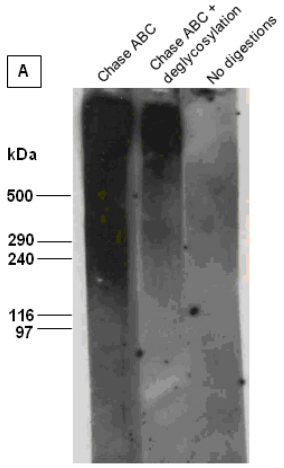

Fig.1 Immunoblotting of intact versican (mixture of V1 and V2 isoforms) in its untreated and chondroitinase ABC (Chase ABC)-digested form, or after combined digestion with chondroitinase ABC and a number of exo- and endoglycosydases. The proteoglycan was resolved by SDS-PAGE under reducing conditions on 3-8% linear gradient gels (MW, HiMark Unstained Protein Standard)

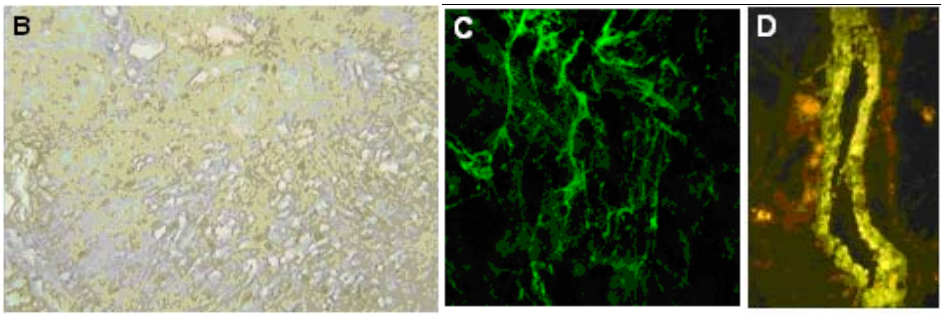

Fig.2 **(B)** Immunohistochemistry on human normal urinary bladder.
(C) Immunostaining of versican in the matrix deposited in vitro of human microvascular endothelial cells after TNF stimulation.
(D) Immunostaining of versican lining the wall of a larger vein in human kidney (PFA-fixed frozen section).

RELATED PRODUCTS:

Product Name	Maker	Cat#
Anti Aggrecan (6F4) Monoclonal Antibody	CAC	PRPG-AG-M01
Anti Aggrecan (5D3) Monoclonal Antibody	CAC	PRPG-AG-M02
Anti Aggrecan (5G2) Monoclonal Antibody	CAC	PRPG-AG-M03
Anti Aggrecan (7B7) Monoclonal Antibody	CAC	PRPG-AG-M04
Anti Versican/CSPG2 (5C12) Monoclonal Antibody	CAC	PRPG-VS-M01
Anti Versican/CSPG2 (4C5) Monoclonal Antibody	CAC	PRPG-VS-M02
Anti NG2 / CSPG4 (2164H5) Monoclonal Antibody	CAC	PRPG-NG-M01
Anti COMP (484D1) Monoclonal Antibody	CAC	PRPG-CP-M01
Anti COMP（490D11）Monoclonal Antibody	CAC	PRPG-CP-M02
Anti Keratan sulfate (373E1) Monoclonal Antibody	CAC	PRPG-KS-M01
Anti Decorin (889C7) Monoclonal Antibody	CAC	PRPG-DC-M01
Anti Fibromodulin (636B12) Monoclonal Antibody	CAC	PRPG-FBM-M01
Anti Biglycan (905A7) Monoclonal Antibody	CAC	PRPG-BG-M01
Anti XTP1 (2191H1) Monoclonal Antibody	CAC	PRPG-XTP-M01
Anti SDP35 (2200D12) Monoclonal Antibody	CAC	PRPG-SDP-M01
Anti Laminin α4 (652C4)　Monoclonal Antibody	CAC	PRPG-LA4-M01
Anti Collagen 12 (378D5) Monoclonal Antibody	CAC	PRPG-CO12-M01

＊< BACKGROUND : Versican [CSPG2] >

Versican, also known as PG-M, and encoded by the VCAN/CSPG2 gene, is a large extracellular matrix chondroitin sulfate proteoglycan ubiquitously expressed in interstitial matrices of the human body, including brain ECM. It was first described in the bovine aorta by Dick Heinegard's and Anders Malmstrom's groups (1982) and shortly after isolated from the chick embryo by Koji Kimata's group. Cloning of the human VCAN/CSPG2 gene was accomplished in 1989 by Zimmermann and Ruoslahti, who also cognated the name *versican* in recognition of its versatile modular structure. *Versican* belongs to the *lectican* proteoglycan subgroup, to which aggrecan, brevican and neurocan also pertain and share the N-terminal (G1) globular domain. This consists of Ig-like loops and two link modules and is responsible for the binding to hyaluronan, which may or may not be further stabilized by link proteins. At least 4 different alternative spliced *versican* isoforms are known in higher vertebrates, denoted V0, V1, V2 and V3, while lower vertebrates may have additional ones in part by duplication of the gene. These isoforms are generated through differential utilization of the central core protein regions denoted GAG-α and GAG-β and encompassing the glycosaminoglycan (chondroitin sulfate) attachment sites. The V0 isoform is the parental one containing both the above "GAG-attachment" exons; the V1 isoforms has only the GAG-β domain; the V2 isoform has only the GAG-α domain; and the V3 isoform is void of any GAG attachment domain, and is therefore a GAG-free proteoglycan. This implies that the versican isoform core proteins have a molecular mass range of 50-550 kDa and, when taking also into consideration the extensive glycosylation of the *versican* core protein, the molecular weights of the different isoforms vary from about 60 kDa to 1,500-2,000 kDa. The C-terminal (G3) globular domain consists of one or two EGF repeats, a C-type lectin module and complement regulatory protein (CRP)-like domain. The C-terminal domain binds a variety of ligands in the ECM and thereby contributes to the macromolecular organization of *versican*.

The role of *versican* in ECM assembly (in particular elastic matrices), cell adhesion, cell migration, and cell proliferation is extensively described and its essential role during embryonic development is confirmed by the early lethality murine embryos with CSPG2 gene deletion. As many other large proteoglycans, *versican* is processed by multiple MMPs and ADAMTSs and its matrix deposition may be strongly down- or up-regulated in degenerative diseases and cancer. In some tumours its expression pattern has been proposed to have a prognostic value.

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