



**MONOCLONAL ANTIBODY**

*For research use only. Not for clinical diagnosis*

**Catalog No. PRPG-AG-M02**

**Anti- Aggrecan (5D3)  
[ACAN/Chondroitin sulphate proteoglycan]**

**BACKGROUND**

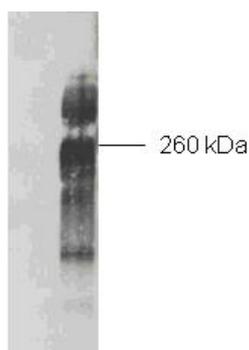
*Aggrecan* is the major proteoglycan in the articular cartilage (synthesized by mature chondrocytes) and a primary in perineuronal nets of the CNS. While its precise function around CNS neurons remains obscure, in articular cartilage it contributes to creating the hydrated gel structure of the ECM via its interaction with hyaluronan, link protein, CMPs, COMP and collagen type IX. Deletion of the *aggrecan* gene cause early disturbances in chondrogenesis and brain defects.\*

|                         |  |
|-------------------------|--|
| <b>Product type</b>     | Primary antibodies   |
| <b>Immunogen</b>        | Purified human articular cartilage aggrecan  |
| <b>Raised in</b>        | Mouse  |
| <b>Myeloma</b>          | -  |
| <b>Clone number</b>     | 5D3  |
| <b>Isotype</b>          | IgG1   |
| <b>Host</b>             | -  |
| <b>Source</b>           | Hybridoma cell culture   |
| <b>Purification</b>     | -  |
| <b>Form</b>             | Liquid   |
| <b>Storage buffer</b>   | Supernatant supplemented with 0.05% NaN <sub>3</sub>   |
| <b>Concentration</b>    | ND   |
| <b>Volume</b>           | 2 mL   |
| <b>Label</b>            | Unlabeled  |
| <b>Specificity</b>      | Aggrecan (ACAN/Chondroitin sulfate proteoglycan)   |
| <b>Cross reactivity</b> | Human, Bovine<br>Other species have not been tested.   |
| <b>Storage</b>          | Store at 4°C for short-term storage and -20°C for prolonged storage<br>Aliquot to avoid cycles of freeze / thaw. |
| <b>Other</b>            | <b>Data Link</b> : UniProtKB/Swiss-Prot <a href="#">P16112</a> (PGCA_HUMAN)                                      |

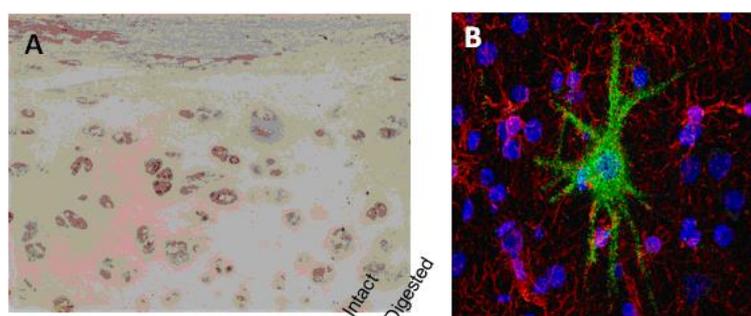
|                          |   |
|--------------------------|---|
| <b>Application notes</b> | WB, IP, IHC(P), ELISA   |
| Recommended dilutions    | <ul style="list-style-type: none"> <li>• Western blotting, 1/10 – 1/30<br/>&gt;2,000 kDa in intact form after SDS-agarose (0.5%) gel electrophoresis under reducing conditions; &gt;950 kDa in chondroitinase ABC digested form after SDS-agarose (0.5%) gel electrophoresis under reducing conditions; 280-300 kDa after SDS-PAGE under reducing conditions following combined digestion with chondroitinase ABC and keratanases.</li> <li>• Immunoprecipitation, 1/5 - 1/10</li> <li>• Immunohistochemistry, 1/5 - 1/50 (paraffin-embedded) **</li> <li>• ELISA, 1/10 - 1/150</li> </ul> <p>**&lt;Staining Pattern&gt;<br/>MAb 5D3 detects aggrecan isoforms enriched around chondrocytes of territorial layers of articular cartilage and abundantly expressed in perineuronal nets of the human adult brain cortex and along nerve fibers of the CNS.<br/>Other applications have not been tested.<br/>Optimal dilutions/concentrations should be determined by the end user.</p> |

|                   |  |
|-------------------|--|
| <b>References</b> | Virgintino D, <i>et all.</i> , (2009) Aggrecan isoforms of perineuronal nets identify subsets of parvalbumin and calbindin neurons differentially distributed in cortical layers II-VI of human adult cortex. <i>J. Cell. Mol. Medicine</i> 13, 3151-3173. |
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## ANTIBODY CHARACTERIZATION



**Fig.1** SDS-PAGE on 3-8% linear gradient gels under reducing conditions of purified human articular cartilage aggrecan prior to (intact) and after combined keratanase I, endo- $\beta$ -galactosidase and chondroitinase ABC-digestion



**Fig.2** (A) Immunostaining of human articular cartilage. (B) Double immunostaining for aggrecan and neurofilaments in human adult cerebral cortex. Cell nuclei are counterstained with TO-PRO-1.

## 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 $\alpha$ 4 (652C4) Monoclonal Antibody | CAC   | PRPG-LA4-M01  |
| Anti Collagen 12 (378D5) Monoclonal Antibody        | CAC   | PRPG-CO12-M01 |

**\* < BACKGROUND : Aggrecan [ACAN/Chondroitin sulphate proteoglycan] >**

*Aggrecan* is the major proteoglycan in the articular cartilage (synthesized by mature chondrocytes) and a primary in perineuronal nets of the CNS. While its precise function around CNS neurons remains obscure, in articular cartilage it contributes to creating the hydrated gel structure of the ECM via its interaction with hyaluronan, link protein, CMPs, COMP and collagen type IX. Deletion of the *aggrecan* gene cause early disturbances in chondrogenesis and brain defects. *Aggrecan* is a multimodular molecule whose core protein is composed of three globular domains denoted G1, G2, and G3, a large extended region spanning the portion of the molecule between the globular domains G1 and G2 and containing the majority of the GAG attachment sites and a second GAG-bearing inter-globular domain (IGD) is posed between G2 and G3. The GAG attachment domain between G1 and G2 prevalently contains chondroitin sulphate chains (up to 40) and some keratan sulfate chains. Conversely, the inter-globular G2-G3 domain carries exclusively keratan sulphate chains. The corresponding core protein region of sclera and brain *aggrekans* do not seem to substituted with keratan sulphates. The G1 amino-terminal domain of the *aggrecan* core protein has the same structural motif as link protein and is responsible for the binding of the proteoglycan to hyaluronan and link protein. The G2 globular domain is homologous to the tandem repeats of G1 and of link protein and is crucial for the synthesis and cellular secretion of *aggrecan*. The G3 globular domain makes up the carboxyl terminus of the core protein and similarly responsible for post-translational processing of the proteoglycan and its secretion, as well as for its molecular interactions with other cartilage ECM components. Fully glycosylated/glycanated *aggrecan* of articular cartilage has typically an average size of 2,400-2,500 kDa, but its *Mr* may vary with age and the conditions of the cartilage tissue. The non-glycosylated/non-glycanated core protein has an approximate *Mr* of 240 kDa.

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