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Product Information

Monoclonal Anti-Collagen, Type X, clone COL-10
produced in mouse, ascites fluid

Catalog Number **C7974**

Product Description

Monoclonal Anti-Collagen, Type X (mouse IgM isotype) is derived from the COL-10 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from a BALB/c mouse immunized with porcine collagen type X. The isotype is determined by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents, Catalog Number ISO2.

Monoclonal Anti-Collagen, Type X reacts specifically with native and denatured collagen type X. It does not recognize collagen types I, II, III, V, IX and XI. The antibody may be used for ELISA, dot-blot, immunoblotting (~ 60 kDa in denatured-reduced preparation) and immunohistochemistry (enzyme-treated, formalin-fixed paraffin-embedded sections from decalcified tissues, and decalcified enzyme-treated frozen tissue sections). Reactivity has been observed with human, deer and porcine collagen type X.

The extracellular matrix[1] is the material found in the extracellular environment of all tissues and organs. It consists of basement membranes and interstitial stroma. The composition of the extracellular framework of all vertebrates is dominated by a class of molecules known as collagens,[1,2] each with unique features suited for its function and location. The collagens are proteins composed of three subunit polypeptides that can vary in length, which interact to form a triple helix. The molecular basis of the triple helix is provided by a repeated unique amino acid sequence (Gly-x-y). The polypeptides generated are capable of assembly into fibrillar or other types of supramolecular assemblies, which are deposited in the extracellular matrix. More than eighteen distinct collagen types have been identified. Short chain collagens (Types VIII and X), form a subgroup, so named because their subunits are short (only about 60 kDa). Despite similarities in domain structure, amino acid sequences, and genomic exon configurations, the two types show very different temporal and spatial expression.[1] Type X collagen, $[\alpha1(X)]_3$, is a product of hypertrophic chondrocytes.[3-6]

The molecule isolated from chondrocyte cultures or from cartilage is a homotrimer of 59 kDa $\alpha1(X)$ chains, while there have been reports on a recombinant molecule of 75 kDa.[7] It shares a similar domain structure with type VIII collagen: a central triple-helical (COL1) domain of 50 kDa is flanked by N-terminal (NC2) and C-terminal (NC1) non-triple-helical domains.[8] In addition, both collagen types represent major components of hexagonal lattice structure, in which the collagen molecules link together by interactions involving the nontriple-helical end regions. Despite these similarities, a distinct tissue distribution has been found for these two molecules: type VIII collagen is distributed in various tissues, whereas type X is restricted to normal fetal hypertrophic cartilage in the growth zones of long bones, vertebrae and ribs, and in adult ($>$ 21 yr) thyroid cartilage, where it may provide a scaffold to prevent local collapse as the cartilage matrix is removed during endochondral ossification.[1] It is also found in bone fracture callus, in osteoarthritic cartilage and in chondrogenic neoplasms, and may be involved in cartilage mineralization. Type X collagen is non-fibrillar, but forms fine pericellular filaments in association with cartilage collagen. It interacts with matrix proteins, such as connexin V, chondrocalcein, collagen II and proteoglycans, as well as with Ca^{2+}. Mutations in the NC1–encoding domain of the human $\alpha1(X)$ collagen gene, are associated with Schmid metaphysical chondroplasia.[3] The development of antibodies against collagens has provided a powerful method for examining the distribution of these connective tissue proteins and for investigation of epithelial-mesenchymal interactions, tumorigenesis and basement membrane biology in ontogeny and epithelial differentiation.[6] Antibodies that react specifically with collagen type X are useful for the study of specific differential tissue expression and the immunolocalization of collagen type X.

Reagents

Supplied as ascites fluid containing 15 mM sodium azide.

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability
For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile
A minimum working dilution of 1:1,000 is determined by indirect immunoperoxidase staining of formalin-fixed paraffin-embedded and enzyme-treated sections of decalcified human osteochondroma.

Note: In order to obtain best results in various techniques and preparations, we recommend determining optimal working dilution by titration.

References

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