COSMO BIO CO., LTD.
Inspiration for Life Science

Catalog No. LSL-LB-0092

Anti (rat MAP) Type X Collagen

1. Description

Host animal	Rabbit
Source (Volume)	Whole Serum (100ul)
Titer	According to the ELISA assay, results are positive for dilutions up to 100,000 fold against linear synthetic peptides.
Source of antigen	rat Multiple Antigen Peptide *
Cross reactivity	Cross react with rat, mouse, chicken and human.*
Characteristic	Does not cross react with Type I, II, III, IV, V, VI collagen.
Application &	ELISA, Immunohistochemistry.
Standard dilution	More than 1:200 dilution using Immunofluoresence method.

* Cross reaction will differ between species. The above dilution is only a recommendation and the optimum concentration may differ for each case.
The MAP sequence is 14 residue contains the NCD sequence.

2. Storage

Store below -20℃ (below -70℃ for prolonged storage).
After thawing, store in small aliquots in sealable vials and store below -70℃. To prevent degradation from repeated thawing, store the antiserum between 0 to 4℃ after second thawing.

3. Stability

Stable for three years at -70℃.
This product does not contain preservatives such as NaN3.

For research use only; not for use as a diagnostic.

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Modulated Expression of Type X Collagen in the Meckel's Cartilage with Different Developmental Fates[1]

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Mammalian Meckel's cartilage undergoes regionally diverse histodifferentiation: the caudal end of Meckel's cartilage extends to the developing ear and gives rise to malleus and incus through endochondral ossification while its major distal region differentiates into sphenomandibular ligament and the anterior ligament of the malleus tympanic plate through fibrous transformation. Since the entire Meckel's cartilage develops up to chondrocyte hypertrophy, the regional extracellular matrix components in the hypertrophic Meckel's cartilage may differ in association with the diverse developmental fates. In this project, the expressions of cartilage collagens were investigated in developing rat Meckel's cartilage and particular interest was given to type X collagen. A cDNA, HP114, encoding the NC1 domain of rat α1(X) collagen was cloned, and a synthetic peptide based on the sequence deduced from HP114 was used to generate a monospecific antibody. *In situ* hybridization of newborn rat condylar and angular cartilages undergoing endochondral ossification showed restricted labeling with the α1(X) collagen probe in the hypertrophic chondrocyte layer. In contrast, the α1(X) collagen probe totally failed to label the major distal portion of Meckel's cartilage even in the hypertrophic cartilage zone. Immunohistochemistry using the anti-type X collagen monospecific antibody consistently failed to recognize the epitope in the corresponding portion of Meckel's cartilage throughout the experimental periods of gestational Day 17, newborn, and Postnatal Day 7, while the strictly localized positive staining was found in the posterior part of Meckel's cartilage which gave rise to malleus and incus. Since major cartilage collagens type II and type IX were found to be present throughout Meckel's cartilage, we postulate that the regulatory molecular mechanism of type X collagen expression may be closely associated with the developmental fates of fibrous transformation and endochondral ossification in mammalian Meckel's cartilage.

INTRODUCTION

Embryonic development of the mammalian mandible begins as an elevation of ectomesenchyme in the first branchial arch. Ectomesenchyme tissues differentiate in several directions and ultimately form primary and secondary cartilages, membranous bone, muscles, and tooth germs (Sicher and Bhasker, 1972). Meckel's cartilage is one of the earliest structures to appear in mandibular ectomesenchyme providing a mechanical support to the developing mandible; however, a direct role of Meckel's cartilage in mandibular bone formation is somewhat limited. The development of the alveolar process and mandibular body starts as a thin plate of membranous bone formed lateral to, and at some distance from, Meckel's cartilage. This distal portion of Meckel's cartilage is eventually replaced with fibrous tissue (Richman and Diewert, 1988) and becomes sphenomandibular ligament and then anterior ligament of the malleus tympanic plate after separation by the squamous plate of temporal bone. The caudal part of Meckel's cartilage extends to the developing ear and gives rise to the ossicles such as malleus and incus in the middle ear cavity through endochondral ossification (Fig. 1) (Bhasker *et al.*, 1953; Frommer and Margolies, 1970; Diewert, 1983; Goret-Nicaise and Pilet, 1983).

Histologically, the entire portion of Meckel's cartilage undergoes the tissue maturation process up to the point where the chondrocytes become hypertropic. In general, type II collagen accounts for the major constituent of cartilage extracellular matrix, which is associated with type IX collagen throughout cartilage histodifferentiation (Mayne, 1989, see references within). However, maturing hypertrophic chondrocytes begin to express a specific phenotype which includes an increase in alkaline phosphatase activity (Fell and Robinson, 1929), the presence of parathyroid hormone receptors (Barling and Bibby, 1985), and expression of type X collagen (Schmid and Conrad, 1982; Gibson *et al.*, 1982, 1984; Schmid and Linsenmayer, 1983). Although the func-

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カタログNo. LB－0092

Anti (ratMAP) Type X Collagen

Ⅰ. 内容　　Lot No. 812021

免疫動物	ウサギ
性状・包装ｻｲｽﾞ	全血清・１００μℓ
力価	ELISA で100,000 倍希釈まで陽性
抗原由来	ラット Multiple Antigen Peptide
種間交差	マウス、ニワトリと交差＊
特徴	typeⅠ・Ⅱ・Ⅲ・Ⅳ・Ⅴ・Ⅵ collagen と非交差、typeX collagenが局在する軟骨周辺部と良く反応
標準希釈率	蛍光抗体法で１：２００以上

＊種によって交差性が異なると思われます、希釈率等充分に検討下さい。
但し、ＭＡＰに合成したＮＣＤ中のアミノ酸配列（１４残基）は動物種を越えて良く保存されている。

Ⅱ. 保存上の注意

－２０℃以下（長期間の場合は－７０℃以下）で凍結して下さい。
解凍後は密栓のできる小型容器に研究の規模に応じて少量づつ分注し、－７０℃以下で保存して下さい。
凍結融解の繰り返しによる力価の低下を避ける為、再解凍後の抗血清は０～４℃に保ち操作・保存して下さい。

Ⅲ. 安定性

－７０℃で３年間安定。
但し、NaN_3 等の防腐剤は入っていません。

製造元　　総発売元

株式会社 エル・エス・エル　　コスモ・バイオ株式会社