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Datasheet for 600-401-D19

Collagen I alpha 1 propeptide Antibody

Overview

Description:	Anti-Collagen I, alpha 1 propeptide (RABBIT) Antibody - 600-401-D19
Item No.:	600-401-D19
Size:	100 µL
Applications:	IHC, WB, ELISA, FC, IF
Reactivity:	Human, Mouse, Rat
Host Species:	Rabbit

Product Details

Background:	Collagen I alpha 1 propeptide Antibody detects collagen I which is an extracellular matrix protein that serves as a scaffold defining the shape and mechanical properties of many tissues and organs including skin, tendon, artery walls, fibrocartilage, bone and teeth. Type 1 collagen is the must abundant protein in mammals. Collagens are synthesized with N-terminal and C-terminal propeptides that are cleaved during maturation and secretion. After cleavage of the propeptides, the most N-terminal and C-terminal remaining sequences are known as telopeptides. Mutations in the collagen 1, alpha 1 gene (COL1A1) are known to cause osteogenesis imperfecta (aka brittle bone disease). Furthermore, mutations found in the fist 90 residues of the helical region of alpha 1 collagen have been implicated in the prevention or delayed removal of the procollagen N-propeptide leading to a combined osteogenesis imperfecta and Ehlers-Danlos syndrome (EDS) phenotype. Anti-Collagen I alpha 1 propeptide Antibody is ideal for investigators involved in Cell Signaling, Neuroscience, Signal Transduction research.
Synonyms:	Alpha-1 type I collagen, COLA1A1
Host Species:	Rabbit
Clonality:	Polyclonal
Format:	IgG

Target Details

Gene Name:	COL1A1
Reactivity:	Human, Mouse, Rat

Immunogen Type:	Conjugated Peptide
Immunogen:	Anti-collagen I, alpha 1 propeptide Antibody was produced in rabbit by repeated immunizations with a synthetic peptide corresponding to amino acid residues specific to collagen 1, alpha 1 propeptide conjugated to KLH.
Purity/Specificity:	Anti-Collagen I alpha 1 propeptide antibody is directed against collagen I alpha 1 propeptide (C-terminal region). Anti-Collagen I alpha 1 propeptide antibody was affinity purified from monospecific antiserum by immunoaffinity purification. Anti-Collagen I alpha 1 propeptide antibody recognizes Collagen I alpha 1 propeptide from human, rat, and mouse sources. Cross reactivity with Collagen I alpha 1 propeptide from other species has not been determined. However, reactivity is also expected from most vertebrate species based on very high sequence homology.
Relevant Links:	• NCBI - NP_000079.2 • GeneID - 1277 • UniProtKB - P02452.5

Application Details

Tested Applications:	IHC, WB
Suggested Applications:	ELISA, FC, IF (Based on references)
Application Note:	Anti-Collagen I, alpha 1 propeptide Antibody is tested for use in ELISA, Western Blotting and IHC. Specific conditions for reactivity should be optimized by the end user. Expect a band of approximately 180 kDa in size corresponding to collagen I alpha I polypeptide in human lung fibroblast extracts or other appropriate tissues or lysates. Collagen I alpha 1 propeptide antibody also works well for IHC on paraformaldehyde-fixed sections with a simple antigen-retrieval protocol (incubate slides for 20 minutes at 90º C in 10 mM sodium citrate (pH 6.0)/ 0.1 % Tween-20). Note that in paraffin sections of formaldehyde-fixed fibrotic mouse lung tissue, the antibody recognizes collagen I molecules that are still associated with the cells in which they were synthesized.
Assay Dilutions:	All assays should be optimized by the user. Recommended dilutions (if any) may be listed below.
ELISA:	1:5000 - 1:50,000
IHC:	1:100
IP:	1:100
WB:	1:1000

Formulation

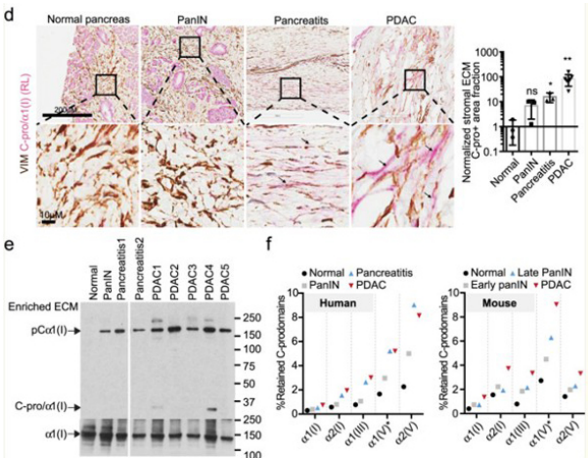
Physical State:	Liquid

Concentration:	10 titrated reagent
Buffer:	0.02 M Potassium Phosphate, 0.15 M Sodium Chloride, pH 7.2
Preservative:	None

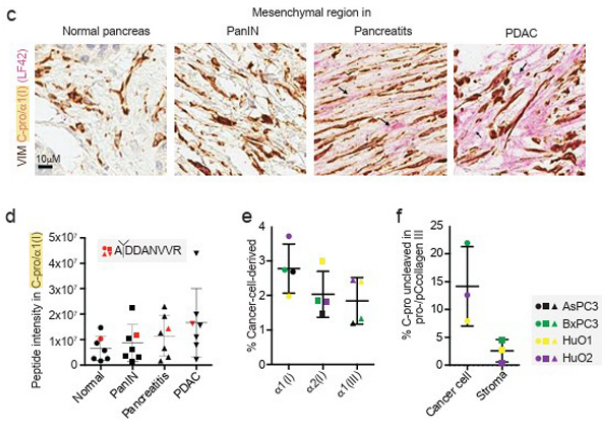
Shipping & Handling

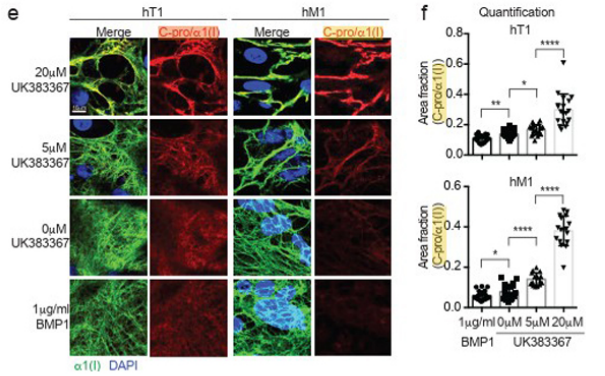
Shipping Condition:	Dry Ice
Storage Condition:	Store vial at -20° C prior to opening. This product is stable at 4° C as an undiluted liquid. For extended storage, aliquot contents and freeze at -20° C or below. Avoid cycles of freezing and thawing. Dilute only prior to immediate use.
Expiration:	Expiration date is one (1) year from date of receipt.

Images



Immunohistochemistry
d) Double-label immunohistochemical staining showing that anti-C-pro/α1(I) staining (red, with RL antibody) is in the extracellular space (negative for the cytoplasmic marker VIM in brown) of the mesenchymal regions in PDAC and pancreatitis samples but not in normal or PanIN pancreas. The mesenchymal regions are enlarged and quantified. The quantification was done by calculating the fraction of C-pro/α1(I) positive and VIM-negative area to that of VIM-negative ECM region and then normalizing the ratios to that of normal pancreas. Arrows point to extracellular C-pro/α1(I) regions. The numbers of quantified samples are 3, 3, 3, 7 (left to right). *p < 0.05; **p < 0.01; ns not significant. Two-tailed t-tests are performed. All columns are represented by mean ± SD.
e) Western blotting (WB) showing large majority of the C-pro/α1(I) in the diseased pancreas ECM is present as uncleaved forms attached to α1(I), showing a representative image of three experimental repeats.
f) Estimation of the percentage of each fibrillar collagen C-prodomain that is retained in the ECM in each stage. Note that there is increased C-prodomain retention as disease progresses. The percentages were derived from the average intensity of [1] peptides that map to the C-prodomain region divided by that of [2] peptides from the mature collagen region. Fig 1. PMID: 33879793



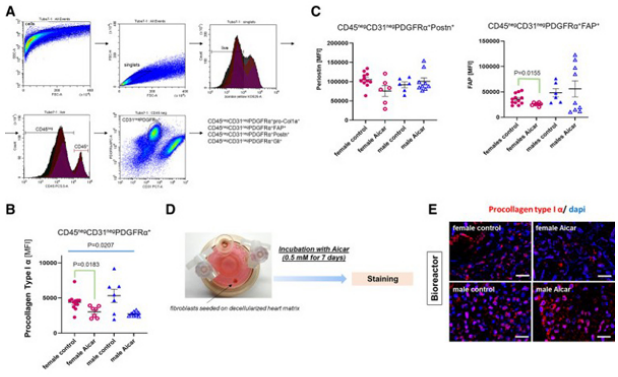


Immunohistochemistry

C), double color immunohistochemical staining showing that a-C-pro/a1(I) (LF42) staining is present in the extracellular space (negative for the cytoplasm marker VIM) in PDAC but not in normal pancreas in human. Arrows point to extracellular C-pro/a1(I) regions. The images are representative of 3, 3, 3, 7 tissue samples (left to right). D), intensity of peptides that map to human C-pro/a1(I) (N=7). Red marks represent the peptide that spans the pC-protease cleavage site (sequence shown) in human proa1(I). SF1.
PMID: 33879793

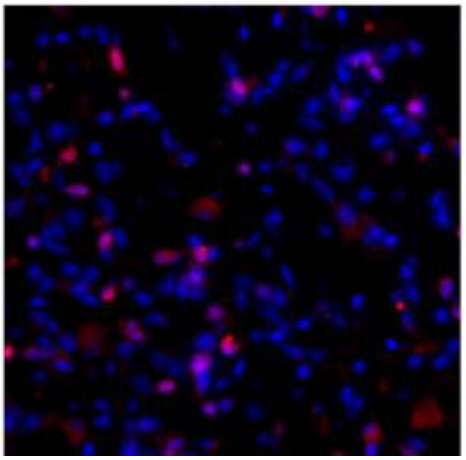
Immunofluorescence Microscopy

E, F) increasing amounts of BMP1 inhibitor UK383367 increased extracellular C-prodomain (Cpro/a1(I)) signal (E) after staining without permeabilization, quantified by the area fraction of mature a1(I) that is also positive for C-pro/a1(I) (F). On the contrary, adding BMP1 protein decreased C- pro/a1(I) signal (E,F). N numbers are 18, 17, 20, 19 for hT1 set and 20, 20, 15, 17 for hM1 set. SF2.
PMID: 33879793



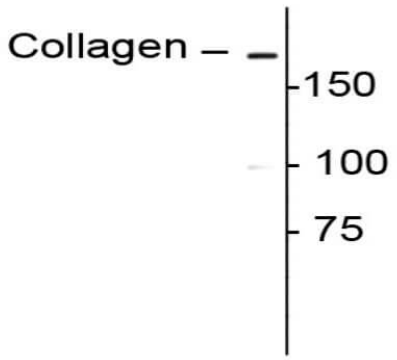
Flow Cytometry

Collagen deposition and turnover in the old female and old male mouse heart in response to 5-aminoimidazole-4-carboxamide riboside (AICAR) treatment.
A: gating strategy to identify the nonmyocyte/nonmyeloid/nonendothelial-cell cardiac fibroblast population (CD45negCD31negPDGFRα+) that was analyzed for expression of procollagen type I α, fibroblast-activated protein (FAP), periostin (Postn), and Gli1.
B: mean fluorescence intensity (MFI) of procollagen type I α in CD45negCD31negPDGFRα+ cells isolated from control or AICAR-treated old female and male mouse hearts.
C: graph depicting the MFI for periostin (left) and FAP (right) in the CD45negCD31negPDGFRα+ cells (n = 6–12/group).
D: summary of the ex vivo experiments performed using bioreactor vessels. Fibroblasts were seeded on sex-matched matrices isolated from old mouse hearts. They were then incubated with 0.5 mM AICAR for 7 days.
E: immunostaining for procollagen type 1α in cardiac fibroblasts seeded on sex-matched matrices in the bioreactor. Scale bar = 50 μm (n = 3). Brown–Forsythe and Welch one-way ANOVA was used to test the significant difference among the four groups, to determine the significant difference among the groups for B and C (n = 7–12). Fig 4. PMID: 35714177



Immunofluorescence Microscopy

Immunofluorescence Microscopy of Rabbit Anti-Collagen I - alpha 1-propeptide antibody. Tissue: fibrotic mouse lung tissue. Fixation: 0.5% PFA. Antigen retrieval: not required. Primary antibody: Collagen I antibody at 10 µg/mL for 1 h at RT. Secondary antibody: Fluorescein rabbit secondary antibody at 1:10,000 for 45 min at RT. Localization: Collagen I is an extracellular matrix protein. Staining: Collagen I molecules (red) with bis-benzimide (blue) nuclear counterstain.



Western Blot
Western Blot of Rabbit anti-Collagen I alpha 1 propeptide antibody. Lane 1: rat lung lysate. Lane 2: none. Load: 10 µg per lane. Primary antibody: Collagen I antibody at 1:400 for overnight at 4°C. Secondary antibody: IRDye800™ rabbit secondary antibody at 1:10,000 for 45 min at RT. Block: 5% BLOTTO overnight at 4°C. Predicted/Observed size: ~180 kDa for collagen 1. Other band(s): none.

References

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- Takahashi S et al. Bile acid sequestration reverses liver injury and prevents progression of nonalcoholic steatohepatitis in Western diet–fed mice. *J Biol Chem.* (2020)
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