abcam

ab270993

Anti-Collagen I antibody [EPR24331-53]

Anti-Collagen I antibody [EPR24331-53] (ab270993) is a rabbit monoclonal antibody detecting Collagen I in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, IHC-Fr, ICC/IF, mIHC**. Suitable for **Mouse, Rat**.

- Multiplex IHC validated on the Leica BOND® MAX using Opal reagents
- Biophysical QC for unrivalled batch-batch consistency
- Over 70 publications

Lab Essentials | Recombinant | RabMAb | Advanced Validation | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR24331-53
Purification technique	Affinity purification Protein A
Specificity	FURTHER INFORMATION ON SPECIFICITY (Chinese Version) available under the product protocols section. This file includes key technical notes of experience when using this product.
Concentration	0.536 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC/IF

Tested

Species	Mouse
Dilution info	1/2000
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Human
Dilution info	-
Notes	-

IP

Tested

Species	Mouse
Dilution info	1/30
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Human
Dilution info	-

Notes	-

WB

Tested

Species	Mouse
Dilution info	1/1000
Notes	For mouse samples, please use high sensitivity substrate.

Species	Rat
Dilution info	1/1000
Notes	For mouse samples, please use high sensitivity substrate.

Not recommended

Species	Human
Dilution info	-
Notes	For mouse samples, please use high sensitivity substrate.

IHC-Fr

Tested

Species	Mouse
Dilution info	1/100
Notes	Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20)

Species	Rat
Dilution info	1/100
Notes	Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20)

Not recommended

Species	Human

Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	1/500
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Human
Dilution info	-
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Not recommended

Species	Human
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

mIHC

Tested

Species	Mouse
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Human
Dilution info	-
Notes	-

Target data

See full target information Col1a1

Function	Type I collagen is a member of group I collagen (fibrillar forming collagen).

Storage

Shipped at conditions	Conditional Ambient

Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Anti-Collagen I antibody [EPR24331-53] (ab270993) was developed by Abcam using patented rabbit monoclonal antibody technology and is validated for use in Flow Cyt (Intra), ICC/IF, IHC-Fr, IHC-P, IP and WB.

Abcam's high quality manufacturing and validation processes ensure Anti-Collagen I antibody [EPR24331-53] (ab270993) has high sensitivity and specificity alongside high lot-to-lot consistency and reproducibility.

Anti-Collagen I antibody [EPR24331-53] (ab270993) specifically detects Collagen I (UniProt ID: P11087; Molecular weight: 95kDa) and is sold in a convenient trial size to enable initial testing (20 µL) and larger sizes for subsequent scaling up experiments (100 µL and 1 mL).

Conjugation-ready, carrier free format available for antibody clone EPR24331-53 - ab279711.

Antibody clone EPR24331-53 is also available pre-conjugated to a variety of labels for your convenience - Alexa Fluor® 488, Alexa Fluor® 647, APC, PE, Alexa Fluor® 568, Alexa Fluor® 555, Alexa Fluor® 594, Alexa Fluor® 750 (ab309248, ab309367, ab310848, ab310918, ab312943, ab313153, ab313351, ab321535).

Collagen I is a major component of the tumor microenvironment, influencing cancer progression by enhancing tumor stiffness, promoting metastasis and inhibiting anti-tumor immune responses. It also affects the efficacy of immunotherapies, making it a critical factor in cancer prognosis and treatment strategies.

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Collagen type I also called collagen I is a structural protein expressed mainly in connective tissues such as skin tendon bone and ligaments. It serves as an important component in providing mechanical strength and integrity to these tissues. Collagen I is a fibrillar collagen known for its triple-helix structure composed of two alpha-1 chains and one alpha-2 chain and has a molecular mass of approximately 300 kDa. Researchers often employ collagen western blot and collagen ELISA techniques for its detection. Collagen suppliers offer various collagen antibodies used in these assays to study its distribution and function.
Biological function summary	Collagen type I plays a central role in maintaining the extracellular matrix and supporting cellular environments. It interacts with other matrix proteins and cells forming complexes that help in tissue development and repair. Type I collagen is especially important in bone matrix working alongside minerals like hydroxyapatite to provide rigidity and support. Anti-collagen antibodies aid in studying its biological functions and interactions which are critical to understanding tissue dynamics.
Pathways	Collagen type I interacts with multiple signaling cascades involved in tissue remodeling and repair. It is a significant player in the TGF-? pathway which regulates fibrosis and wound healing processes. In these pathways proteins such as fibronectin and integrins work in concert with collagen type I to orchestrate cellular responses to damage. Researchers often examine its role in these pathways to uncover therapeutic possibilities for disease interventions.
Associated diseases and disorders	Collagen type I has strong connections to conditions like osteogenesis imperfecta and fibrosis. Mutations or irregularities in collagen I production can lead to osteogenesis imperfecta a genetic disorder characterized by brittle bones. In fibrosis excessive collagen deposition disrupts normal tissue architecture contributing to organ dysfunction. In both conditions type I collagen interacts with other proteins like matrix metalloproteinases which modulate its breakdown and remodeling highlighting its importance in disease pathology.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

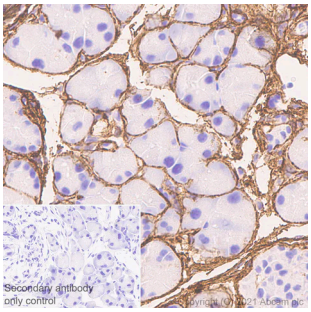
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

16 product images

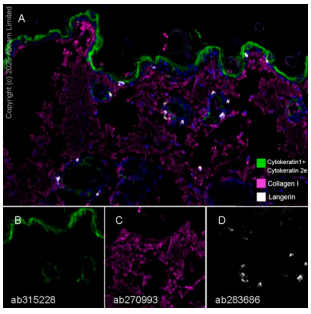


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Collagen I Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Collagen I antibody

Immunohistochemical analysis of paraffin-embedded Mouse pancreatic cancer tissue labeling Collagen I with ab270993 at 1/500 dilution followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining in connective tissues of mouse pancreatic cancer. The section was incubated with ab270993 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used.

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins



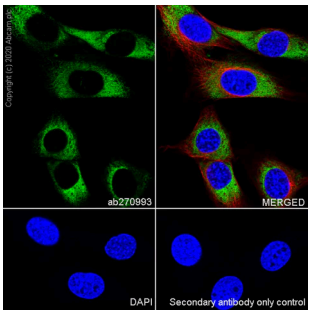
Multiplex immunohistochemistry - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Multiplex immunohistochemistry analysis of formalin/PFA-fixed paraffin-embedded Mouse skin staining of Cytokeratin 1 + Cytokeratin 2e with ab315228 at a 1/2000 (0.263 µg/ml) dilution, Collagen I with ab270993 and Langerin with ab283686 at a 1/1000 dilution followed by a ready to use secondary antibody Opal Polymer HRP Ms + Rb.

Panel A: merged staining of anti-Cytokeratin 1 + Cytokeratin 2e (green; Opal™520), anti-Collagen I (magenta; Opal™690) and anti-Langerin (gray; Opal™570) on mouse skin.
Panel B: anti-Cytokeratin 1 + Cytokeratin 2e staining epidermis keratin layer in mouse skin.
Panel C: anti-Collagen I staining connective tissues in mouse skin.
Panel D: anti-Langerin staining Langerhans cells in mouse skin.
Nuclear DNA was labeled with DAPI (shown in blue).

The section was incubated in three rounds of staining: in the order of ab315228, ab270993 and ab283686 for 30 mins at room temperature. Each round was followed by a separate fluorescent tyramide signal amplification system,

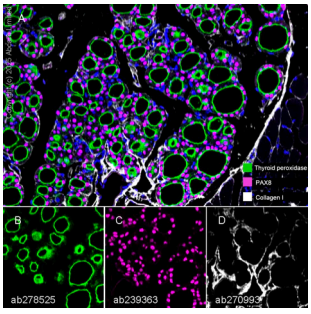
Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.



Immunocytochemistry/ Immunofluorescence - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Collagen I Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Collagen I antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized NIH/3T3 cells labelling Collagen I with ab270993 at 1/2000 dilution, followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) antibody at 1/1000 dilution (Green). Confocal image showing cytoplasmic staining in NIH/3T3 cells is observed. ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 dilution (Red). The Nuclear counterstain was DAPI (Blue).
Secondary antibody only control: Secondary antibody is ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) at 1/1000 dilution.

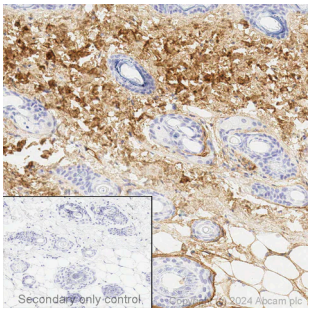


Multiplex immunohistochemistry - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Multiplex immunohistochemistry analysis of formalin/PFA-fixed paraffin-embedded mouse thyroid staining of Thyroid Peroxidase/TPO with ab278525 at a 1/5000 (0.109 µg/ml) dilution, PAX8 with ab239363 at 1/2000 (0.254 µg/ml) dilution, and Collagen I with ab270993 at a 1/500 (1.152 µg/ml) dilution, followed by a ready to use secondary antibody Opal Polymer HRP Ms + Rb.
Panel A: merged staining of anti-Thyroid peroxidase (green; Opal™ 520), anti-PAX8 (magenta; Opal™ 690) and anti-Collagen I (gray; Opal™ 570) on mouse thyroid.
Panel B: anti-Thyroid peroxidase showed cytoplasmic and membranous staining on mouse thyroid.
Panel C: anti-PAX8 showed nucleus staining on mouse thyroid.
Panel D: anti-Collagen I staining connective tissues in mouse thyroid.
Nuclear DNA was labeled with DAPI (shown in blue).

The section was incubated in three rounds of staining: in the order of ab278525, ab239363 and ab270993 for 30 mins at room temperature. Each round was followed by a separate fluorescent tyramide signal amplification system.

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.

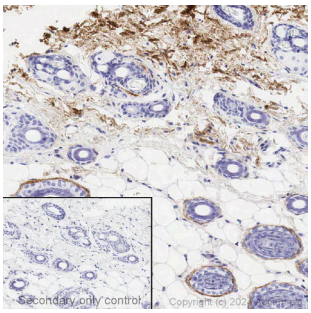


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Immunohistochemical analysis of formalin fixed paraffin embedded mouse skin labelling Collagen I with ab270993 at a concentration of 0.025µg/ml. The immunostaining was performed on a Leica Biosystems BOND® RX instrument with a Bond™ Polymer Refine Detection kit. Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution 2) for 20mins.

ab270993 anti-Collagen I antibody [EPR24331-53] was incubated for 15mins at room temperature. Sections were counterstained with Hematoxylin. Image inset shows absence of staining in secondary antibody only control.

Customers are encouraged to optimise antigen retrieval conditions, antibody concentration, incubation times and temperature for best results in their own IHC assay workflow (automated and manual)

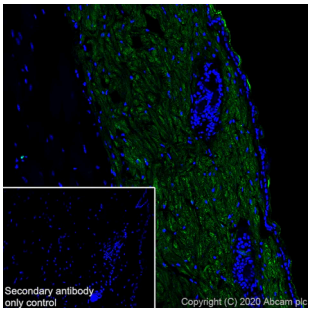


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Immunohistochemical analysis of formalin fixed paraffin embedded mouse skin labelling Collagen I with ab270993 at a concentration of 0.5µg/ml. The immunostaining was performed on a Ventana DISCOVERY ULTRA (Roche Tissue Diagnostics) instrument with a ChromoMap DAB kit. Heat mediated antigen retrieval was performed with DISCOVERY cell conditioning solution (CC1) 100°C, pH8.5 for 32mins.

ab270993 anti-Collagen I antibody [EPR24331-53] was incubated for 16mins at 37°C. Sections were counterstained with Hematoxylin II. Image inset shows absence of staining in secondary antibody only control.

Customers are encouraged to optimise antigen retrieval conditions, antibody concentration, incubation times and temperature for best results in their own IHC assay workflow (automated and manual)

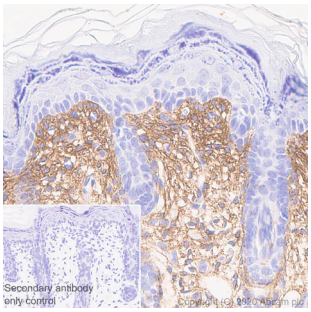


Immunohistochemistry (Frozen sections) - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Collagen I Immunohistochemistry (Frozen sections) staining using rabbit Anti-Collagen I antibody

Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen Mouse skin tissue labeling Collagen I with ab270993 at 1/100 dilution followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) at 1/1000 dilution (Green). Positive staining on mouse skin is observed. The nuclear counterstain was DAPI (Blue).
Secondary antibody control: Secondary antibody is ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488)at 1/1000 dilution.

Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20).

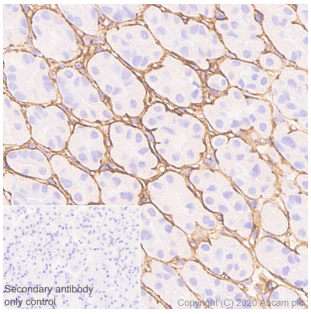


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Collagen I Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Collagen I antibody

Immunohistochemical analysis of paraffin-embedded Rat skin tissue labeling Collagen I with ab270993 at 1/500 dilution followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining in connective tissues of rat skin. The section was incubated with ab270993 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used.

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins

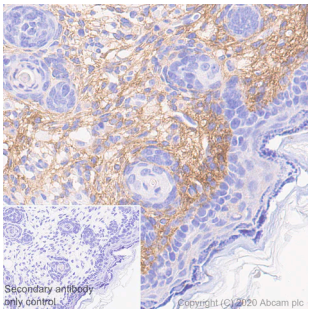


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Collagen I Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Collagen I antibody

Immunohistochemical analysis of paraffin-embedded Mouse stomach tissue labeling Collagen I with ab270993 at 1/500 dilution followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining in connective tissues of mouse stomach. The section was incubated with ab270993 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used.

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins

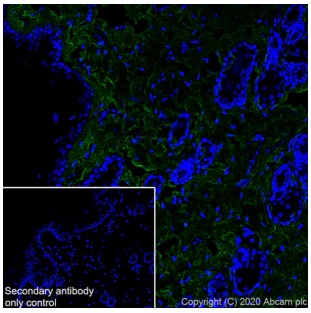


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Collagen I Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Collagen I antibody

Immunohistochemical analysis of paraffin-embedded Mouse skin tissue labeling Collagen I with ab270993 at 1/500 dilution followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining in connective tissues of mouse skin. The section was incubated with ab270993 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used.

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins

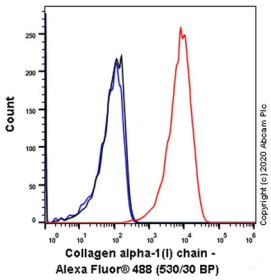


Immunohistochemistry (Frozen sections) - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Collagen I Immunohistochemistry (Frozen sections) staining using rabbit Anti-Collagen I antibody

Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen Rat skin tissue labeling Collagen I with ab270993 at 1/500 dilution followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) at 1/1000 dilution (Green). Positive staining on rat skin is observed. The nuclear counterstain was DAPI (Blue).
Secondary antibody control: Secondary antibody is ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488)at 1/1000 dilution.

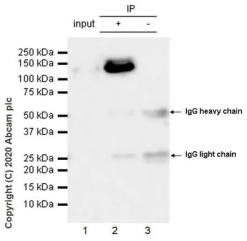
Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20).



Flow Cytometry (Intracellular) - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Collagen I Flow Cytometry (Intracellular) staining using rabbit Anti-Collagen I antibody

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized NIH/3T3 (Mouse embryonic fibroblast) cells labelling Collagen I with ab270993 at 1/500 dilution (Red) compared with a Rabbit monoclonal IgG (ab172730) (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) at 1/2000 dilution was used as the secondary antibody.



Immunoprecipitation - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Collagen I was immunoprecipitated from 0.35 mg Mouse skin tissue lysate 10 ug with ab270993 at 1/30 dilution (2ug in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab270993 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP)(ab131366) was used at 1/5000 dilution.
Lane 1: Mouse skin tissue lysate 10 ug

Lane 2: ab270993 IP in Mouse skin tissue lysate

Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab270993 in Mouse skin tissue lysate

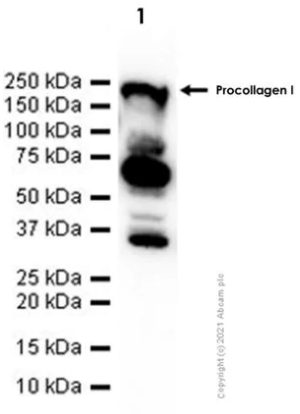
Blocking and dilution buffer and concentration: 5% NFDM/TBST.

Exposure time: 32 seconds

All lanes:
Immunoprecipitation - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Predicted band size: 139 kDa

Observed band size: 138 kDa



Western blot - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Collagen I Western blot staining of NIH/3T3 (mouse embryonic fibroblast), whole cell lysate using rabbit Anti-Collagen I antibody

Blocking buffer and concentration: 5% NFDM/TBST
Diluting buffer and concentration: 5% NFDM/TBST

We are unsure how to define these extra bands below 100kDa.

The molecular weight observed is consistent with what has been described in the literature (PMID:23940311;PMID:29853175).

All lanes:
Western blot - Anti-Collagen I antibody [EPR24331-53] (ab270993) at 1/1000 dilution

All lanes:
NIH/3T3 (mouse embryonic fibroblast), whole cell lysate at 20 µg

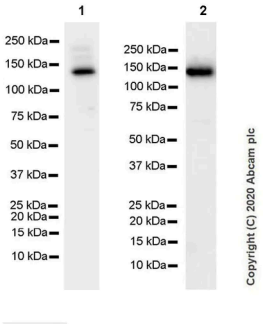
Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 139 kDa

Observed band size: 220 kDa

Exposure time: 20s



Western blot - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Blocking and diluting buffer and concentration: 5% NFDM/TBST
The observed MW is consistent with what has been described in the literature (PMID: 27740527;PMID: 22278938; PMID: 26973392).

Exposure time: Lane 1: 3.25 seconds

Lane 2: 5.5 seconds

All lanes:
Western blot - Anti-Collagen I antibody [EPR24331-53] (ab270993) at 1/1000 dilution

Lane 1:
Mouse skin tissue lysate at 20 µg

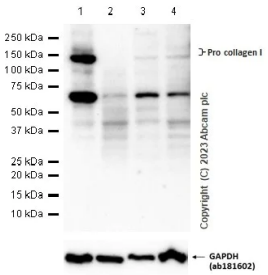
Lane 2:
Rat skin tissue lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 139 kDa

Observed band size: 138 kDa



Western blot - Anti-Collagen I antibody [EPR24331-53] (ab270993)

Blocking buffer and concentration : 5% NFDM/TBST. **Diluting buffer and concentration :** 5% NFDM/TBST. ab181602 was used as a loading control. This blot was produced using a high sensitivity ECL substrate.
All lanes:
Western blot - Anti-Collagen I antibody [EPR24331-53] (ab270993) at 1/1000 dilution

Lane 1:
Mouse skin tissue lysate at 20 µg

Lane 2:
Mouse kidney tissue lysate at 20 µg

Lane 3:
Mouse lung tissue lysate at 20 µg

Lane 4:
Mouse heart tissue lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 139 kDa

Observed band size: 139 kDa

Exposure time: 100s

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.