abcam

Product datasheet

Human Pro-Collagen I alpha 1 ELISA Kit ab210966

Recombinant SimpleStep ELISA

33 References 11 Images

Overview

Product name Human Pro-Collagen I alpha 1 ELISA Kit

Detection method Colorimetric

Precision

Intra-assay

Sample	n	Mean	SD	CV%
Serum	8			1.8%

Inter-assay

Sample	n	Mean	SD	CV%
Serum	3			3%

Sample type Cell culture supernatant, Serum, Plasma, Cell culture extracts, Tissue Extracts

Assay type Sandwich (quantitative)

Sensitivity 5.3 pg/ml

Range 39.06 pg/ml - 2500 pg/ml

Recovery

Sample specific recovery

Sample type	Average %	Range
Serum	93	91% - 94%
Cell culture media	99	97% - 101%
Hep Plasma	101	94% - 107%
EDTA Plasma	108	105% - 114%
Cit plasma	106	102% - 110%

Assay time 1h 30m

Assay duration One step assay

Species reactivity

Reacts with: Human
Does not react with: Cow

Product overview

Pro-Collagen I alpha 1 ELISA kit (ab210966) is designed for the quantitative measurement of human Pro-Collagen I alpha 1 / Pro-Collagen I N-Terminal Propeptide (PINP) in serum, plasma, cell culture supernatants, and cell and tissue extract samples. It uses our proprietary SimpleStep ELISA® technology. Quantitate Human Pro-Collagen I alpha 1 with 5.3 pg/mL sensitivity.

SimpleStep ELISA® technology employs capture antibodies conjugated to an affinity tag that is recognized by the monoclonal antibody used to coat our SimpleStep ELISA® plates. This approach to sandwich ELISA allows the formation of the antibody-analyte sandwich complex in a single step, significantly reducing assay time. See the SimpleStep ELISA® protocol summary in the image section for further details. Our SimpleStep ELISA® technology provides several benefits:

-Single-wash protocol reduces assay time to 90 minutes or less
-High sensitivity, specificity and reproducibility from superior antibodies
-Fully validated in biological samples
-96-wells plate breakable into 12 x 8 wells strips

A 384-well SimpleStep ELISA® microplate (**ab203359**) is available to use as an alternative to the 96-well microplate provided with SimpeStep ELISA® kits.

ASSAY SPECIFICITY This kit recognizes both native and recombinant human Pro-Collagen I alpha 1 protein in serum, plasma, cell culture supernatant, and cell and tissue extract samples only.

SPECIES REACTIVITY This kit recognizes human Pro-Collagen I alpha 1 protein. Other species reactivity was determined by measuring 1:100 (dilution) serum samples of various species, interpolating the protein concentrations from the human standard curve, and expressing the interpolated concentrations as a percentage of the protein concentration in human serum assayed at the same dilution.
Reactivity < 3% was determined for the following species: Mouse, Rat, Cow

Notes

The antibodies in this kit are generated against Pro-Collagen I N-Terminal Propeptide (PINP).

Type I collagen is the most abundant structural protein of connective tissues such as skin, bone and tendon. It is synthesized as a pro-collagen molecule that is characterized by a 300 nm triple helical domain flanked by globular N- and C-terminal propeptides. Specifically, human Pro-Collagen I alpha 1 consists of a signal peptide (amino acids (aa) 1-22), a propeptide (aa 23-161), the mature chain (aa 162-1218), and another propeptide (aa 1219 – 1464). The non-helical propeptides are removed by procollagen N- and C-proteinase activities so that the mature triple helices can self-assemble into collagen fibrils that provide tensile strength to tissues.

Abcam has not and does not intend to apply for the REACH Authorisation of customers' uses of products that contain European Authorisation list (Annex XIV) substances.
It is the responsibility of our customers to check the necessity of application of REACH Authorisation, and any other relevant authorisations, for their intended uses.

Platform

Pre-coated microplate (12 x 8 well strips)

Properties

Storage instructions Store at +4°C. Please refer to protocols.

Components	1 x 96 tests	1 x 96 tests
10X Human Pro-Collagen I alpha 1 Capture Antibody	1 x 600µl	1 x 600µl
10X Human Pro-Collagen I alpha 1 Detector Antibody	1 x 600µl	1 x 600µl
10X Wash Buffer PT (ab206977)	1 x 20ml	1 x 20ml
50X Cell Extraction Enhancer Solution (ab193971)	1 x 1ml	1 x 1ml
5X Cell Extraction Buffer PTR (ab193970)	1 x 10ml	1 x 10ml
Antibody Diluent CPI2	1 x 6ml	1 x 6ml
Human Pro-Collagen I alpha 1 Lyophilized Recombinant Protein	2 vials	2 vials
Plate Seal	1 unit	1 unit
Sample Diluent NS (ab193972)	1 x 50ml	1 x 50ml
SimpleStep Pre-Coated 96-Well Microplate (ab206978)	1 unit	1 unit
Stop Solution	1 x 12ml	1 x 12ml
TMB Development Solution	1 x 12ml	1 x 12ml

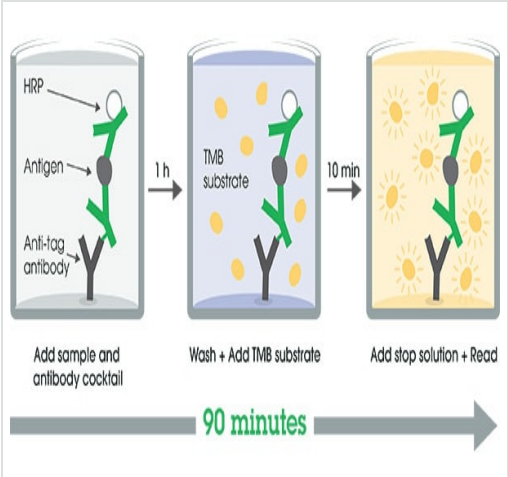
Function Type I collagen is a member of group I collagen (fibrillar forming collagen).

Tissue specificity Forms the fibrils of tendon, ligaments and bones. In bones the fibrils are mineralized with calcium hydroxyapatite.

Involvement in disease Defects in COL1A1 are the cause of Caffey disease (CAFFD) [MIM:114000]; also known as infantile cortical hyperostosis. Caffey disease is characterized by an infantile episode of massive subperiosteal new bone formation that typically involves the diaphyses of the long bones, mandible, and clavicles. The involved bones may also appear inflamed, with painful swelling and systemic fever often accompanying the illness. The bone changes usually begin before 5 months of age and resolve before 2 years of age.
Defects in COL1A1 are a cause of Ehlers-Danlos syndrome type 1 (EDS1) [MIM:130000]; also known as Ehlers-Danlos syndrome gravis. EDS is a connective tissue disorder characterized by hyperextensible skin, atrophic cutaneous scars due to tissue fragility and joint hyperlaxity. EDS1 is the severe form of classic Ehlers-Danlos syndrome.
Defects in COL1A1 are the cause of Ehlers-Danlos syndrome type 7A (EDS7A) [MIM:130060]; also known as autosomal dominant Ehlers-Danlos syndrome type VII. EDS is a connective tissue disorder characterized by hyperextensible skin, atrophic cutaneous scars due to tissue fragility and joint hyperlaxity. EDS7A is marked by bilateral congenital hip dislocation, hyperlaxity of the joints, and recurrent partial dislocations.
Defects in COL1A1 are a cause of osteogenesis imperfecta type 1 (OI1) [MIM:166200]. A dominantly inherited connective tissue disorder characterized by bone fragility and blue sclerae. Osteogenesis imperfecta type 1 is non-deforming with normal height or mild short stature, and no dentinogenesis imperfecta.
Defects in COL1A1 are a cause of osteogenesis imperfecta type 2A (OI2A) [MIM:166210]; also known as osteogenesis imperfecta congenita. A connective tissue disorder characterized by

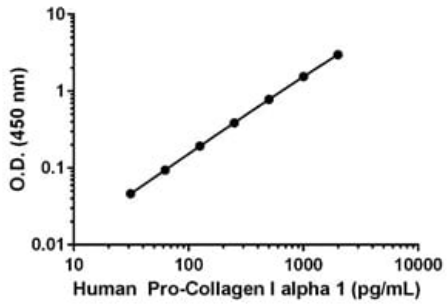
	bone fragility, with many perinatal fractures, severe bowing of long bones, undermineralization, and death in the perinatal period due to respiratory insufficiency. Defects in COL1A1 are a cause of osteogenesis imperfecta type 3 (OI3) [MIM:259420]. A connective tissue disorder characterized by progressively deforming bones, very short stature, a triangular face, severe scoliosis, grayish sclera, and dentinogenesis imperfecta. Defects in COL1A1 are a cause of osteogenesis imperfecta type 4 (OI4) [MIM:166220]; also known as osteogenesis imperfecta with normal sclerae. A connective tissue disorder characterized by moderately short stature, mild to moderate scoliosis, grayish or white sclera and dentinogenesis imperfecta. Genetic variations in COL1A1 are a cause of susceptibility to osteoporosis (OSTEOP) [MIM:166710]; also known as involutional or senile osteoporosis or postmenopausal osteoporosis. Osteoporosis is characterized by reduced bone mass, disruption of bone microarchitecture without alteration in the composition of bone. Osteoporotic bones are more at risk of fracture. Note=A chromosomal aberration involving COL1A1 is found in dermatofibrosarcoma protuberans. Translocation t(17;22)(q22;q13) with PDGF.
Sequence similarities	Belongs to the fibrillar collagen family. Contains 1 fibrillar collagen NC1 domain. Contains 1 VWFC domain.
Post-translational modifications	Proline residues at the third position of the tripeptide repeating unit (G-X-Y) are hydroxylated in some or all of the chains. Proline residues at the second position of the tripeptide repeating unit (G-X-Y) are hydroxylated in some of the chains. O-linked glycan consists of a Glc-Gal disaccharide bound to the oxygen atom of a post-translationally added hydroxyl group.
Cellular localization	Secreted > extracellular space > extracellular matrix.

Images



Other - Human Pro-Collagen I alpha 1 ELISA Kit (ab210966)

SimpleStep ELISA technology allows the formation of the antibody-antigen complex in one single step, reducing assay time to 90 minutes. Add samples or standards and antibody mix to wells all at once, incubate, wash, and add your final substrate. See protocol for a detailed step-by-step guide.



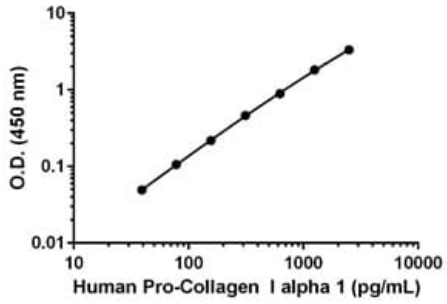
Example of human Pro-Collagen I alpha 1 standard curve in Sample Diluent NS.

Background-subtracted data values (mean +/- SD) are graphed.

Standard Curve Measurements			
Conc. (pg/mL)	O.D. 450 nm		Mean O.D.
	1	2	
0	0.051	0.053	0.052
31.25	0.098	0.098	0.098
62.5	0.149	0.143	0.146
125	0.251	0.240	0.245
250	0.442	0.436	0.439
500	0.840	0.827	0.833
1,000	1.635	1.568	1.602
2,000	3.110	2.996	3.053

Raw value data for example of human Pro-Collagen I alpha 1 standard curve in Sample Diluent NS

Raw data values are shown in the table.

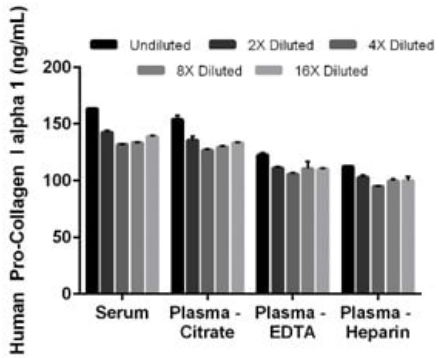


Example of human Pro-Collagen I alpha 1 standard curve in Sample Diluent 1X Cell Extraction Buffer PTR.

Background-subtracted data values (mean +/- SD) are graphed.

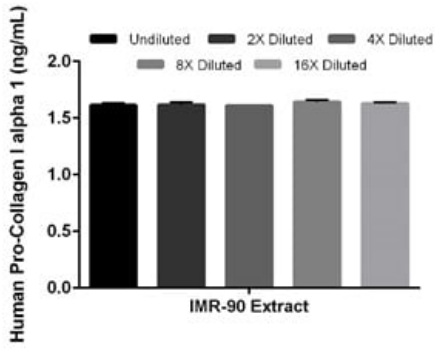
Standard Curve Measurements			
Conc. (pg/mL)	O.D. 450 nm		Mean O.D.
	1	2	
0	0.053	0.057	0.055
39.06	0.104	0.105	0.104
78.13	0.160	0.163	0.161
156.25	0.272	0.273	0.273
312.5	0.511	0.524	0.517
625	0.946	0.955	0.950
1,250	1.858	1.905	1.881
2,500	3.385	3.407	3.396

Raw value data for example of human Pro-Collagen I alpha 1 standard curve in 1X Cell Extraction Buffer PTR.



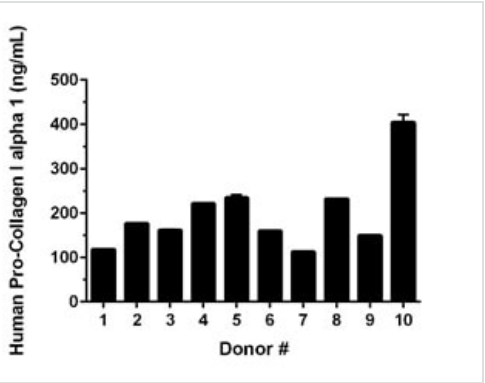
Interpolated concentrations of native Pro-Collagen I alpha 1 in human serum and plasma samples.

The concentrations of Pro-Collagen I alpha 1 were measured in duplicates, interpolated from the Pro-Collagen I alpha 1 standard curves and corrected for sample dilution. Undiluted samples are as follows: serum 1%, plasma (citrate) 1%, plasma (EDTA) 1%, and plasma (heparin) 1%. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Pro-Collagen I alpha 1 concentration was determined to be 142.1 ng/mL in serum, 135.9 ng/mL in plasma (citrate), 112.1 ng/mL in plasma (EDTA) and 102.1 ng/mL in plasma (heparin).



Interpolated concentrations of native Pro-Collagen I alpha 1 in human IMR-90 extract based on a 2 µg/mL extract load.

The concentrations of ProICollagen I alpha 1 were measured in duplicate and interpolated from the ProICollagen I alpha 1 standard curve and corrected for sample dilution. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Pro-Collagen I alpha 1 concentration was determined to be 1.62 ng/mL in IMR-90 extract.



Serum from ten individual healthy human female donors was diluted 1:200 and measured in duplicate.

Interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Pro-Collagen I alpha 1 concentration was determined to be 197.3 ng/mL with a range of 113.0 – 417 ng/mL.

Dilution Factor	Interpolated value	1% Human Serum	1% Human Plasma (Citrate)	1% Human Plasma (EDTA)	1% Human Plasma (Heparin)	2 µg/mL IMR-90 Extract
Undiluted	pg/mL	1,635.4	1,538.2	1,225.6	1,125.3	1,612.4
	% Expected value	100	100	100	100	100
2	pg/mL	713.1	679.0	555.7	514.1	808.7
	% Expected value	87	88	91	91	100
4	pg/mL	329.6	316.7	264.4	237.7	402.2
	% Expected value	81	82	86	84	100
8	pg/mL	167.1	162.1	138.3	124.6	205.0
	% Expected value	82	84	90	89	102
16	pg/mL	86.9	83.4	68.9	62.6	101.7
	% Expected value	85	87	90	89	101

Linearity of dilution - native human Pro-Collagen I alpha 1 in human serum, plasma (citrate, EDTA, Heparin) and IMR-90 Extract

Native human Pro-Collagen I alpha 1 was measured in human serum, plasma, and IMR-90 lysate in a 2-fold dilution series. Sample dilutions are made in Sample Diluent NS for serum and plasma. Sample dilutions are made in Sample Diluent 1X Cell Extraction Buffer PTR for the IMR-90 lysate.

Dilution Factor	Interpolated value	25% Cell Culture Media
Undiluted	pg/mL	1,043.8
	% Expected value	100
2	pg/mL	522.4
	% Expected value	100
4	pg/mL	259.1
	% Expected value	99
8	pg/mL	129.6
	% Expected value	99
16	pg/mL	65.8
	% Expected value	101

Linearity of dilution - recombinant human Pro-Collagen I alpha in cell culture media

Recombinant human Pro-Collagen I alpha 1 was spiked into cell culture media and diluted in a 2-fold dilution series in Sample Diluent NS.

Sandwich ELISA - Human Pro-Collagen I alpha 1

ELISA Kit (ab210966)

To learn more about the advantages of recombinant antibodies see **here**.

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