abcam

Product datasheet

Mouse Pro-Collagen I alpha 1 ELISA Kit ab210579

Recombinant SimpleStep ELISA

12 References 16 Images

Overview

Product name Mouse Pro-Collagen I alpha 1 ELISA Kit

Detection method Colorimetric

Precision

Intra-assay

Sample	n	Mean	SD	CV%
Serum	8			2.4%

Inter-assay

Sample	n	Mean	SD	CV%
Serum	3			5.6%

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

Assay type Sandwich (quantitative)

Sensitivity 6.7 pg/ml

Range 31.3 pg/ml - 2000 pg/ml

Recovery

Sample specific recovery

Sample type	Average %	Range
Serum	106	102% - 109%
Hep Plasma	111	104% - 115%
EDTA Plasma	109	102% - 116%
Cit plasma	115	113% - 116%

Assay time 1h 30m

Assay duration One step assay

Species reactivity **Reacts with:** Mouse

Does not react with: Cow

Product overview

Mouse Pro-Collagen I alpha 1 ELISA Kit (ab210579) is a single-wash 90 min sandwich ELISA designed for the quantitative measurement of mouse Pro-Collagen I alpha 1 / Pro-Collagen I N-Terminal Propeptide (PINP) in cell culture extracts, plasma, serum, and tissue extracts. It uses our proprietary SimpleStep ELISA® technology. Quantitate Mouse Pro-Collagen I alpha 1 with 6.7 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 SimpleStep ELISA® kits.

ASSAY SPECIFICITY

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

This kit is not validated for cell culture supernatants.

SPECIES REACTIVITY

This kit recognizes mouse Pro-Collagen I alpha 1 protein.

Other species reactivity was determined by measuring 1:1,500 (dilution) serum samples of various species, interpolating the protein concentrations from the mouse standard curve, and expressing the interpolated concentrations as a percentage of the protein concentration in mouse serum assayed at the same dilution.

Reactivity < 3% was determined for the following species: Human, Cow

Notes

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, mouse Pro-Collagen I alpha 1 consists of a signal peptide (amino acids (aa) 1-22), a propeptide (aa 23-151), the mature chain (aa 152-1207), and another propeptide (aa 1208 – 1453). 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 384 tests
10X Mouse Pro-Collagen I alpha 1 Capture Antibody	1 x 600µl	1 x 600µl
10X Mouse Pro-Collagen I alpha 1 Detector Antibody	1 x 600µl	1 x 600µl
10X Wash Buffer PT (ab206977)	1 x 20ml	1 x 20ml
384 well CaptSure™ microplates	0 x 0 unit	1 unit
50X Cell Extraction Enhancer Solution (ab193971)	1 x 1ml	6 x 1ml
5X Cell Extraction Buffer PTR (ab193970)	1 x 10ml	1 x 50ml
Antibody Diluent 5BR	1 x 6ml	1 x 6ml
Mouse Pro-Collagen I alpha 1 Lyophilized Recombinant Protein	2 vials	2 vials
Plate Seals	1 unit	1 unit
Sample Diluent NS (ab193972)	1 x 50ml	1 x 250ml
SimpleStep Pre-Coated 96-Well Microplate (ab206978)	1 unit	0 x 0 unit
Stop Solution	1 x 12ml	2 x 12ml
TMB Development Solution	1 x 12ml	2 x 12ml

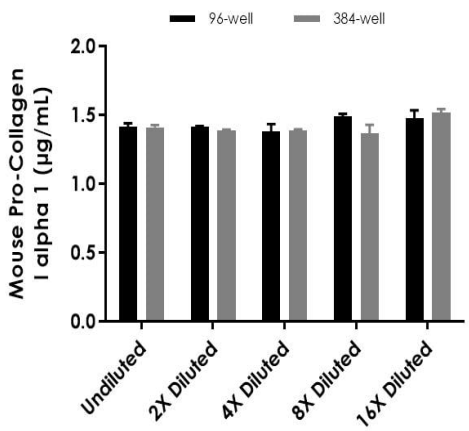
Function Type I collagen is a member of group I collagen (fibrillar forming collagen).

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];

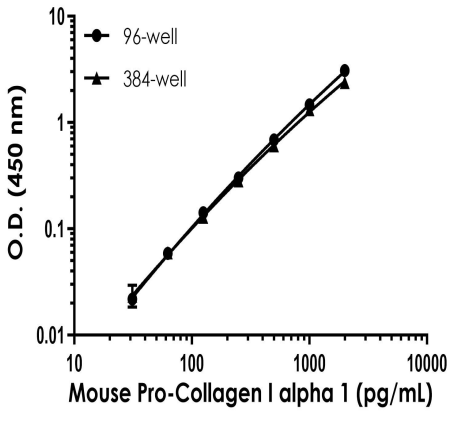
	also known as autosomal dominant Ehlers-Danlos syndrome type VII. EDS is a connective tissue disorder characterized by hyperextensible skin, atrophic cutaneous scars due to tissue fragility and joint hyperlaxity. EDS7A is marked by bilateral congenital hip dislocation, hyperlaxity of the joints, and 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



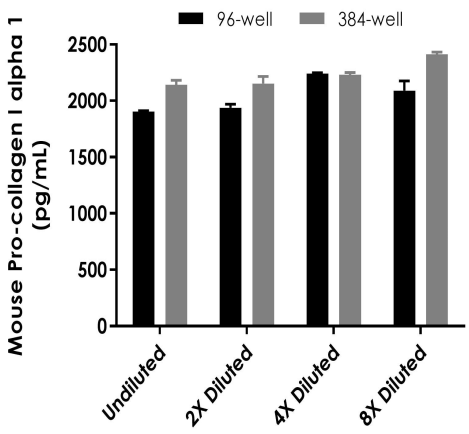
Sandwich ELISA - Mouse Pro-Collagen I alpha 1 ELISA Kit (ab210579)

Interpolated concentration of native Pro-Collagen I alpha 1 was measured in duplicate at different sample concentrations in 96-well vs. 384-well plates. Undiluted samples are 1:1,200 serum. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). Sample dilutions are made in Sample Diluent NS.



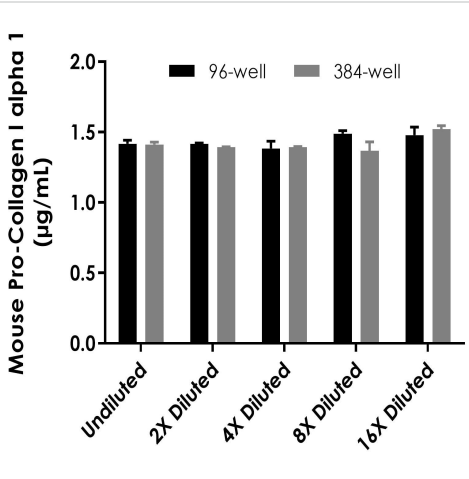
Sandwich ELISA - Mouse Pro-Collagen I alpha 1 ELISA Kit (ab210579)

Example of mouse Pro-Collagen I alpha 1 standard curve in 96-well vs. 384-well plate. Background-subtracted data values (mean +/- SD) are graphed.



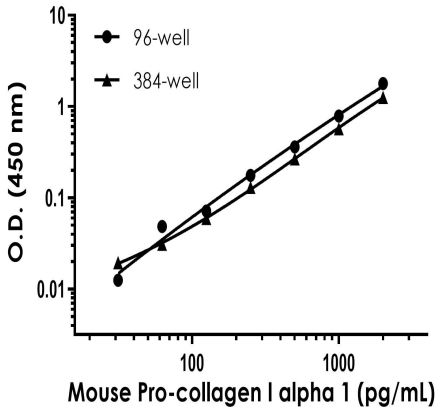
Interpolated concentrations of mouse Pro-Collagen I alpha 1 in NIH/3T3 cell extract in 96-well vs. 384-well plates.

Interpolated concentration of native Pro-Collagen I alpha 1 was measured in duplicate at different sample concentrations in 96-well vs. 384-well plates. Undiluted samples are 5 µg/mL NIH/3T3 cell extract. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). Sample dilutions are made in 1X Cell Extraction Buffer PTR



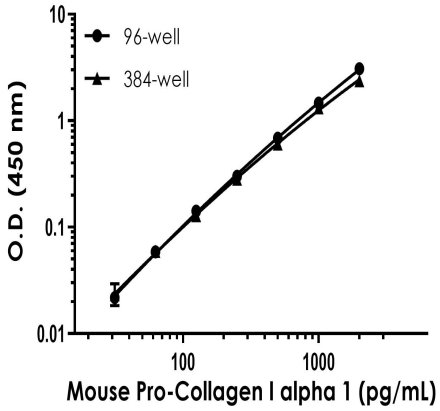
Interpolated concentrations of mouse Pro-Collagen I alpha 1 in serum in 96-well vs. 384-well plates.

Interpolated concentration of native Pro-Collagen I alpha 1 was measured in duplicate at different sample concentrations in 96-well vs. 384-well plates. Undiluted samples are 1:1,200 serum. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). Sample dilutions are made in Sample Diluent NS.



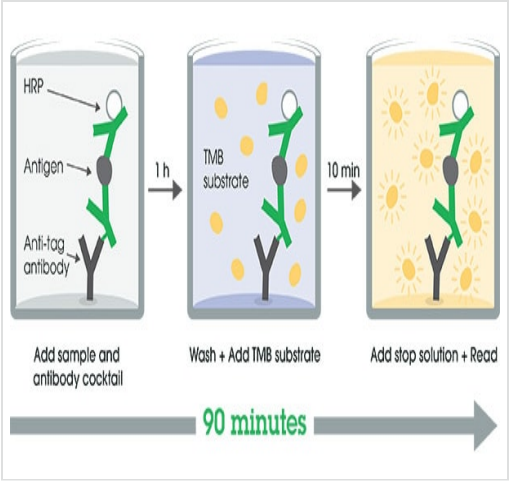
Example of mouse Pro-Collagen I alpha 1 standard curve in 1X Cell Extraction Buffer PTR in 96-well vs. 384-well plate.

Example of mouse Pro-Collagen I alpha 1 standard curve in 96-well vs. 384-well plate. Background-subtracted data values (mean +/- SD) are graphed.



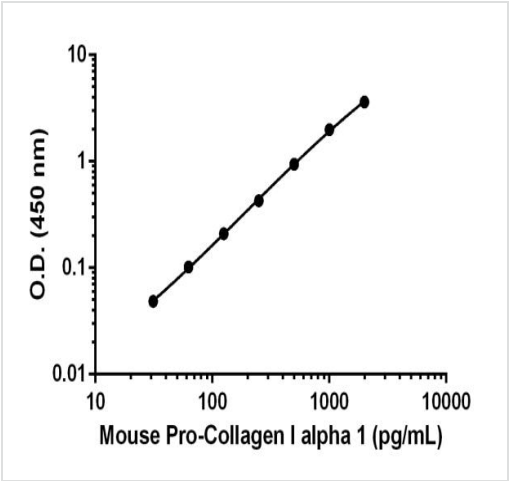
Example of mouse Pro-Collagen I alpha 1 standard curve in Sample Diluent NS in 96-well vs. 384-well plate.

Example of mouse Pro-Collagen I alpha 1 standard curve in 96-well vs. 384-well plate. Background-subtracted data values (mean +/- SD) are graphed.



Other - Mouse Pro-Collagen I alpha 1 ELISA Kit (ab210579)

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.



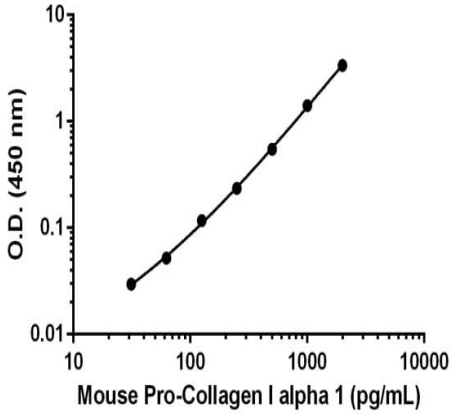
Example of mouse Pro-Collagen I alpha 1 standard curve in Sample Diluent NS.

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

Standard Curve Measurements			
Conc. (pg/mL)	O.D. 450 nm		Mean O.D.
	1	2	
0	0.053	0.061	0.057
31.3	0.108	0.103	0.106
62.5	0.157	0.161	0.159
125	0.268	0.265	0.267
250	0.494	0.473	0.484
500	0.987	1.008	0.997
1,000	2.074	2.023	2.049
2,000	3.703	3.634	3.669

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

The Pro-Collagen I alpha 1 standard curve was prepared as described. Raw data values are shown in the table. Background-subtracted data values (mean +/- SD) are graphed.



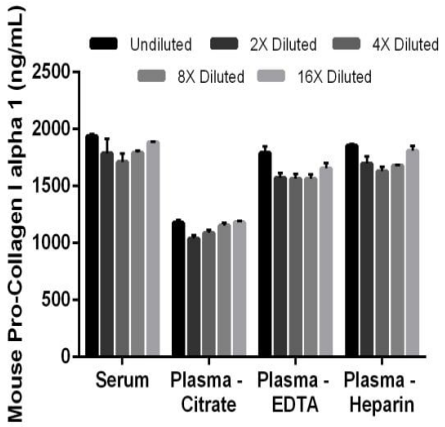
Example of mouse Pro-Collagen I alpha 1 standard curve in Sample Diluent 1X Cell Extraction Buffer PTR.

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

Standard Curve Measurements			
Conc. (pg/mL)	O.D. 450 nm		Mean O.D.
	1	2	
0	0.050	0.061	0.055
31.3	0.087	0.082	0.085
62.5	0.108	0.106	0.107
125	0.175	0.169	0.172
250	0.290	0.290	0.290
500	0.606	0.601	0.603
1,000	1.477	1.448	1.463
2,000	3.402	3.445	3.424

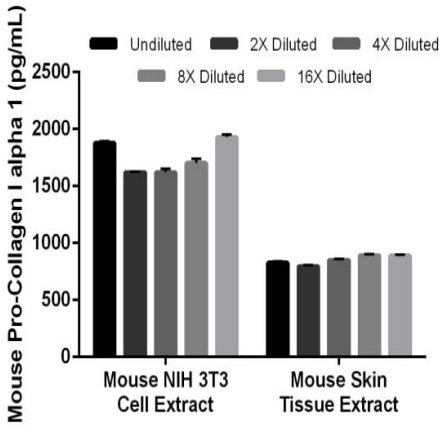
Example of mouse Pro-Collagen I alpha 1 standard curve in Sample Diluent 1X Cell Extraction Buffer PTR.

The Pro-Collagen I alpha 1 standard curve was prepared as described. Raw data values are shown in the table. Background-subtracted data values (mean +/- SD) are graphed.



Interpolated concentrations of native Pro-Collagen I alpha 1 in mouse 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 1:1,200, plasma (citrate) 1:1,200, plasma (EDTA) 1:1,200 and plasma (heparin) 1:1,200. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Pro-Collagen I alpha 1 concentration was determined to be 1,822 ng/mL in serum, 1,128 ng/mL in plasma (citrate), 1,628 ng/mL in plasma (EDTA), and 1,734 ng/mL in plasma (heparin).



Interpolated concentrations of native Pro-Collagen I alpha 1 in mouse NIH 3T3 cell extract based on a 10 µg/mL extract load and mouse skin tissue extract based on a 20 µg/mL extract load.

The concentrations of Pro-Collagen I alpha 1 were measured in duplicate and interpolated from the Pro-Collagen 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 1,751 pg/mL in NIH 3T3 cell extract and 851 pg/mL in mouse skin tissue extract.

Dilution Factor	Interpolated value	1:1,200 Mouse Serum	1:1,200 Mouse Plasma (Citrate)	1:1,200 Mouse Plasma (EDTA)	1:1,200 Mouse Plasma (Heparin)
Undiluted	pg/mL	1615.0	981.3	1491.2	1546.2
	% Expected value	**100**	**100**	**100**	**100**
2	pg/mL	742.6	432.5	655.0	706.3
	% Expected value	**92**	**88**	**88**	**91**
4	pg/mL	356.2	226.7	325.5	339.6
	% Expected value	**88**	**92**	**87**	**88**
8	pg/mL	186.7	120.2	162.9	175.0
	% Expected value	**92**	**98**	**87**	**91**
16	pg/mL	98.2	61.6	86.2	94.2
	% Expected value	**97**	**100**	**92**	**97**

Dilution Factor	Interpolated value	10 µg/mL Mouse NIH 3T3 cell extract	20 µg/mL Mouse Skin tissue extract
Undiluted	pg/mL	1879.2	828.5
	% Expected value	**100**	**100**
2	pg/mL	811.4	397.3
	% Expected value	**86**	**96**
4	pg/mL	405.2	212.5
	% Expected value	**86**	**103**
8	pg/mL	212.8	111.3
	% Expected value	**91**	**107**
16	pg/mL	120.6	55.7
	% Expected value	**103**	**108**

Linearity of dilution.

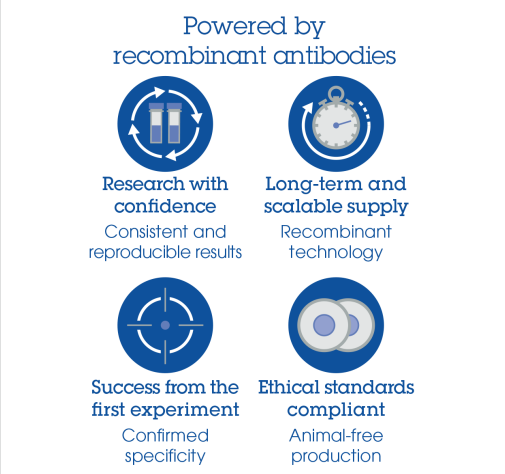
Linearity of dilution is determined based on interpolated values from the standard curve. Linearity of dilution defines a sample concentration interval in which interpolated target concentrations are directly proportional to sample dilution.

Native mouse Pro-Collagen I alpha 1 was measured in serum, plasma, and cell and tissue extract samples in a 2-fold dilution series. Sample dilutions are made in Sample Diluent NS for serum and plasma samples. Sample dilutions are made in Sample Diluent 1X Cell Extraction Buffer PTR for cell and tissue extract samples.

Sample Diluent Buffer	n=	Minimal Detectable Dose
Sample Diluent NS	24	6.7 pg/mL
1X Cell Extraction Buffer PTR	24	7.9 pg/mL

Assay sensitivity.

The calculated minimal detectable dose (MDD) is determined by calculating the mean of zero standard replicates and adding 2 standard deviations then extrapolating the corresponding concentration. The MDD is dependent on the Sample Diluent buffer used.



Sandwich ELISA - Mouse Pro-Collagen I alpha 1 ELISA Kit (ab210579)

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

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