Supplementary materials

SPARC is highly expressed in young skin and promotes extracellular matrix integrity in fibroblasts via the TGF-β signaling pathway

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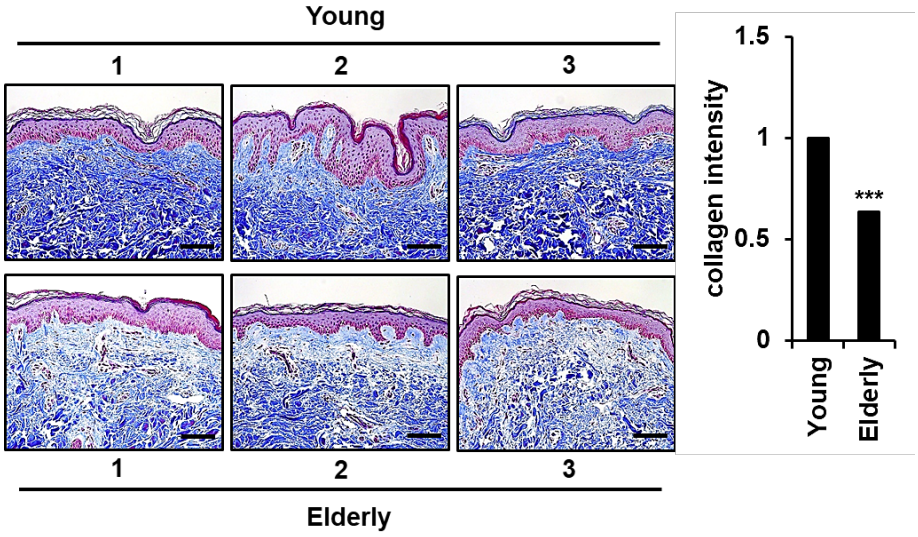
Supplementary Table S1. Primer sequences for RT-PCR of human SPARC and nine selected DEGs.

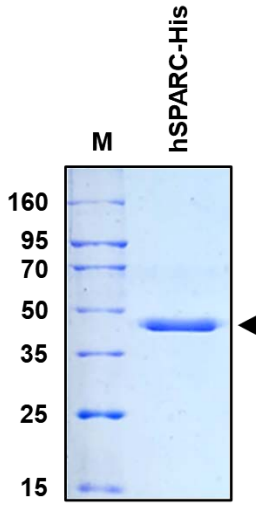
Gene Symbol	Nucleotide sequence (5′ → 3′)	Nucleotide position	Annealing temp (℃)	GenBank No.
SPARC	AGACCATGAGTATGTGTAACAGGAGG CTTGAAATGTTGCTAGTGTGATTGG	2616-2641 2771-2747	59.5	NM_003118
ELN	ACCTGGTTGACCTGTCATGGC ACTGCTCTGAAGTTCAGTGGACC	2916–2936 3094–3072	56.3	NM_000501
TSPAN2	GTCCTCTGCTGTGCGATACGA GCATTCACTCAAGGGGTAAACCAG	696–716 916–893	61.3	NM_005725
COMP	ACGTGGTCTTGGACACAACCAT AGCTGATGGGTCTCATAGTCCTCT	2165–2186 2297–2275	61.3	NM_000095
OLFM2	AGTATTCCCACATCTCGATGCTGG GATCACCCTTGAGGGACACAGG	1387–1410 1601–1580	61.3	NM_058164
WNT2	TTCTAGAGCAGTTGGCCAAGCA TACCCCTAAGGGTGGTAGCTGT	1479–1500 1692–1671	61.3	NM_003391
CCN2	CCCCAGTGACAGCTAGGATGT TGCCACAAGCTGTCCAGTCT	1643–1663 1798–1779	56.3	NM_001901
TSPAN13	TGGCTGACCTACAGATACAGGAAC TGCCACCGAGCTTCAGAGAC	766–789 1047–1028	61.3	NM_014399
SERPINE1	CAGACCTGGTTCCCACTGAGG GCCAGTGCCACAGTGGACT	1679–1699 1880–1862	61.3	NM_000602
PTGS2	CACTGCAGGCCTGGTACTCA CATGCAGGTAGCCAGGCTTGA	2939–2958 3188–3168	61.3	NM_000963

Supplementary Table S2. Reads per kilobase million (RPKM) values for the selected 9 DEGs and human *COL1A1*, *MMP-1*, and *GAPDH* genes.

Gene Symbol	Con	SPARC	$\log_2$(fold change)	*p* value	*q* value
COL1A1	1,876.17	3,450.10	0.97	1.1×10^{-5}	2.2×10^{-3}
ELN	23.42	186.26	3.07	1.5×10^{-37}	3.4×10^{-33}
TSPAN2	0.95	9.67	2.72	3.9×10^{-19}	1.2×10^{-15}
COMP	8.06	38.80	2.33	2.0×10^{-21}	8.5×10^{-18}
OLFM2	14.65	62.86	2.19	3.3×10^{-19}	1.2×10^{-15}
WNT2	13.65	49.74	2.02	2.3×10^{-17}	5.5×10^{-14}
CCN2	39.97	120.37	1.65	5.0×10^{-13}	6.9×10^{-10}
TSPAN13	6.05	16.52	1.51	4.2×10^{-9}	2.4×10^{-6}
SERPINE1	249.93	680.20	1.51	2.1×10^{-11}	2.3×10^{-8}
MMP-1	3,167.69	1,099.07	-1.46	6.7×10^{-11}	6.3×10^{-8}
PTGS2	23.50	7.06	-1.78	9.8×10^{-14}	1.5×10^{-10}
GAPDH	3,729.40	3,395.69	-0.07	7.4×10^{-1}	1.0



Supplementary Fig. S1. Analysis of collagen intensity in human skin tissues.
Formalin-fixed and paraffin-embedded sections of human skin tissues were deparaffinized and subjected to Masson's trichrome staining [61]. The collagen intensity [62] was quantified using Image J software (National Institutes of Health, Bethesda, MD, USA) by measuring the staining intensity at three locations in each tissue section. The graph shows a comparison of the relative collagen intensity between elderly human skin tissues and young tissues. Values are shown as means ± SD of three independent experiments. ***$p < 0.001$ *vs*. young tissues. Magnification, ×200. Bar, 100 μm.



Supplementary Fig. S2. Purification of recombinant human SPARC-His.
His-tagged recombinant human SPARC protein purified from conditioned medium of HEK 293 cells stably transfected with pcDNA3.1-hSPARC-His was resolved by SDS-PAGE and stained with Coomassie brilliant blue. M, molecular weight marker.