Supplementary Table 1. Demographic data of keloid samples used in this study.

| Study ID | Age | Gender | Race  | Site       |
|----------|-----|--------|-------|------------|
| ND1      | 37  | Female | Asian | Prothoracic|
| ND2      | 35  | Male   | Asian | Shoulder   |
| ND3      | 40  | Female | Asian | Prothoracic|
| ND4      | 36  | Male   | Asian | Foreskin   |
| ND5      | 36  | Male   | Asian | Eye        |
| RK1      | 38  | Female | Asian | Prothoracic|
| RK2      | 37  | Female | Asian | Shoulder   |
| RK3      | 39  | Male   | Asian | Prothoracic|
| RK4      | 36  | Female | Asian | Prothoracic|
| RK5      | 40  | Male   | Asian | Prothoracic|
| SK1      | 37  | Female | Asian | Shoulder   |
| SK2      | 43  | Female | Asian | Shoulder   |
| SK3      | 60  | Male   | Asian | Ear        |
| SK4      | 35  | Male   | Asian | Ear        |
| SK5      | 36  | Male   | Asian | Ear        |
Supplementary Table 2. Antibodies used in immunohistochemical staining.

| Targets             | Source       | Species reaction     |
|---------------------|--------------|----------------------|
| Type I collagen     | Abcam, ab34710 | rabbit-anti-human    |
| Type III collagen   | Abcam, ab7778  | rabbit-anti-human    |
| Aggrecan            | Abcam, ab186414 | rabbit-anti-human    |
| Osteoprotegerin     | Abcam, ab73400 | rabbit-anti-human    |
### Supplementary Table 3. Primers used in quantitative PCR analysis.

| Gene          | Primer sequence (5'–3')                                      | Annealing temperature (°C) | Product size (bp) |
|---------------|---------------------------------------------------------------|----------------------------|-------------------|
| **RUNX2**     | Sense: ACAGTAGATGGACCTCGGGA                                    | 58                         | 113               |
|               | Antisense: ATACTGGGATGAGGAATGCG                                 |                            |                   |
| **ALPL**      | Sense: AAACCGAGATACAAGCACTCCAC                                  | 58                         | 140               |
|               | Antisense: TCCGTCACGTTGTTCTGTTCAG                              |                            |                   |
| **OCN**       | Sense: ATGAGAGCCCTCACACTCCTCG                                  | 58                         | 255               |
|               | Antisense: GTCAGCCAACTCAGTCACAGTCC                             |                            |                   |
| **SOX9**      | Sense: AGCCGAAAGCGAGCTCGAAACT                                  | 58                         | 215               |
|               | Antisense: GCACTTAGGAAAGCGCGGAGGT                              |                            |                   |
| **COL2A1**    | Sense: CTTGGGCACCTCGGCTTCTTTAG                                 | 58                         | 510               |
|               | Antisense: TCCCCGCGACTCTCTGACGTAT                              |                            |                   |
| **Aggrecan**  | Sense: AGTATCATCAGTCACGAATCTAGCA                               | 58                         | 132               |
|               | Antisense: AATGCAGAGGGTTGTTACATCA                              |                            |                   |
| **COL10A1**   | Sense: CCAGCAGCGAGAATCCATCTGA                                  | 58                         | 143               |
|               | Antisense: CTTGGTGTTGGTGAATGGGCA                               |                            |                   |