**Supplementary data:**

**Table 1: ICRS-II Histological scoring results**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Tissue Morphology | Matrix Staining | Cell Morphology | Surface Architecture | Basal Intergradation | Tidemark | Overall assessment |
| Microfracture | 48.5 ±32.3 | 54.5 ±32.1 | 50.2 ±26.7 | 34.4 ± 31.1 | 53.1 ± 40.4 | 18.75 ± 40.1 | 34.5 ± 31.5 |
| AC-ECM Scaffold | 48.3 ± 28.4 | 64.38 ±20.2 | 75.8± 13.9 | 55.08 ± 23.06 | 53.23± 34.92 | 28.125 ± 35.94 | 50.79 ± 21.61 |
| Scaffold Rapid +FPSCs | 35.6 ± 32.3 | 37.0 ±34.4 | 54.4± 37.0 | 31.25 ± 32.9 | 35.0 ± 31.98 | 30.5 ± 45.28 | 35.0 ± 31.3 |

**Table 2: Gross morphology scoring system used for repair evaluation. Max score=8.**

| **Characteristic** | **Grading** | **Score** |
| --- | --- | --- |
| Edge integration (new tissue relative to native cartilage) | Full | 2 |
| Partial | 1 |
| None | 0 |
| Smoothness of cartilage surface | Smooth | 2 |
| Intermediate | 1 |
| Rough | 0 |
| Cartilage surface, degree of filling | Flush | 2 |
| Slight depression | 1 |
| Depressed/overgrown | 0 |
| Color of cartilage, opacity or translucency of the neocartilage | Opaque | 2 |
| Translucent | 1 |
| Transparent | 0 |