**Table 4:** Natural scaffold-based meniscal tissue engineering

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| **Material** | **Model** | **Follow-up** | **Results** | **Ref** |
| ***In Vivo*** |  |  |  |  |
| **CMI** |  |  |  |  |
| CMI | Human | 3 years | Recellularisation by fibrochondrocytes. Presence of unorganized and immature collagen. | 136 |
| CMI | Human | 26 weeks | Healing of implant to capsule and meniscal stumps. Tissue invasion and revascularisation. ECM production. | 105 |
| CMI | Human | 6 years | No degeneration of chondral surfaces. Uniform ECM. Significant improvement from preoperative state. | 113 |
| CMI | Human | 7 years | Meniscus-like tissue formation and integration. Improved activity levels in patients who have had previous meniscal surgery compared to control. Repair tissue formation. | 137 |
| CMI | Human | 2, 5 years | Shrinkage of CMI. Protection of chondral surfaces. Bone oedema present in 13 patients. Two types of tissue formed after 5 years with increased cellularity and vascularity. | 138 |
| CMI | Human | 10 years | Preserved articular cartilage and joint space. Improvement from pre-operative state. | 139 |
| **Repair Materials** |  |  |  |
| Fibrin glue | Leporine | 4 weeks | Edema. Loosening of menisci. Impairment of cell migration into allograft. | 142 |
| Meniscal fragments | Leporine | 3, 6, 12 weeks | Formation of thick synovial tissue. Meniscus-like tissue formation at 12 weeks. Rougher surface and radially thinner than native meniscus. No comparison to native tissue. | 144 |
| **SIS** |  |  |  |  |
| Small intestinal submucosa (SIS) | Canine | 3, 6, 12 months | Mature repair tissue visible for SIS group. Significantly lower articular cartilage damage than meniscectomy. Compressive moduli of underlying cartilage of SIS treated menisci not significantly different to untreated group after 12 months. | 64 |
| ***In Vitro*** |  |  |  |  |
| Collagen reinforced with p(DTD DD) | Bovine | - | Stiffness similar to ovine medial meniscus. Correlation between applied axial load and resultant circumferential tensile load. | 153 |
| **Decellularised Meniscus** |  |  |  |
| Decellularised human meniscus | Not tested in vivo  | - | Complete cell removal. No significant differences in stiffness, residual force and collagen I, II and III histoarchitecture from native. | 116 |
| Decellularised porcine meniscus | Not tested in vivo | - | Complete cell removal. No expression of xenogeneic epitope. Retention of histoarchitecture. 59.4% loss of GAGs. Retention of biomechanical properties. Collagen I, II and III, and chondroitin sulphate present. | 117 |
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