AIM: The meniscus of the human knee joint has an important function for the shock absorption, stability and power transmission from the upper to the lower leg. After meniscus injury often a partial or complete resection is necessary. Only injuries in the outer third may heal spontaneously or upon primary suture due to the vascularisation in these segments. After partial or total meniscectomy osteoarthritis of the knee joint is common in a large number of patients.

The goal of our investigations was to establish meniscus cell cultures and to characterise the fibrochondrocytes (meniscus cells) in vitro. METHODS: We examined the expression of different growth factors, cytokines and proteins in human menisci from surgical preparations using immunohistochemistry and RT-PCR analysis. RESULTS: Human meniscus cells express the collagens I, II, III, and VI, the matrix metalloproteinases-1, -2, -3, -8, and -13, BMP-2, and -4, TGFbeta1, VEGF, IGF-I, and -II, FGF-2, endostatin, iNOS, vimentin, TIMP-1, and -2, aggrecan, IL-1beta, IL-6, and IL-18. Staining with the monoclonal antibody AS.02 in all examined cells confirmed their mesenchymal origin.

CONCLUSION: New strategies for the treatment of meniscus damage can be derived from these results and further advances for the tissue engineering of meniscus tissue can be obtained.