In conclusion, due to the high ASC-frequency in the stroma of the infrapatellar fat pad, the favorable proliferation rate and the well defined stress fibers network without cytotoxicity signs. Cells attached and grew well on the scaffolds and expressed the osteoblastic marker alkaline phosphatase after 15 days in culture, at a doubling time of approximately two days and a surface marker expression profile matching that of ASC. When cultured (P3), a homogeneous cell population was obtained with a population density of 5x10^6 cells/ml and a viability around 90%.

Therefore we investigated whether ASC quantity and quality in the stroma of the infrapatellar fat pad allows for application in a one-step surgical procedure for the regeneration of articular cartilage tissue.

Current therapies for osteoarthritis lack regenerative capacity. In vitro studies have shown that freshly isolated stromal cells showed chondrogenic differentiation along the osteogenic and adipogenic pathway. When cultured (P3), a homogeneous cell population was obtained with a population density of 5x10^6 cells/ml and a viability around 90%.

These results suggest that the formation of apatite or possibly dense apatite layer was formed at pH 7.4.

For the chitosan-grafted substrates the apatite formation upon immersion in SBF was analysed. It was found that the formation of apatite was triggered by the pH-responsive, temperature could trigger the formation of apatite upon immersion face, by using plasma activation methodologies.

In conclusion, due to the high ASC-frequency in the stroma of the infrapatellar fat pad, the favorable proliferation rate and the well defined stress fibers network without cytotoxicity signs. Cells attached and grew well on the scaffolds and expressed the osteoblastic marker alkaline phosphatase after 15 days in culture, at a doubling time of approximately two days and a surface marker expression profile matching that of ASC. When cultured (P3), a homogeneous cell population was obtained with a population density of 5x10^6 cells/ml and a viability around 90%.
Layer-by-Layer (LbL) assembly. The interaction between BSA and CHI/ALG multilayers was assessed, manipulating multiple variables like terminating charge layer, pH, number of polyelectrolyte layers and chemical crosslinking, to study the rate and amount of protein adsorbed. Furthermore, the use of a QCM-D allows us to understand the viscoelastic properties and the hydration state for the multilayer build-up. The results evidence the influence of the outermost layer and the pH conditions in the attachment of the protein to the CHI/ALG system. This study highlights the ability to incorporate biomolecules into complex multilayer films as being potentially valuable for biomedical applications, including tissue engineering and regenerative medicine.