

2 AIM OF THE STUDY

To create a new autologous and viable tissue patch, our laboratory focused on tissue engineering of cardiovascular structures. In our laboratory a new pulsatile flow system that provides biochemical and biomechanical signals to regulate autologous patch-tissue development *in vitro* was developed. Using this newly developed bioreactor system a viable patch tissue construct with ovine cells was fabricated. Although our early *in vitro* results appeared promising, it was not known whether it is possible to fabricate implantable human vascular tissue in our newly developed *in vitro* system. Therefore, this study was designed to fabricate patch tissue using human vascular cells because tissue engineered patches have to consist of functional human tissue at the time point of implantation (Figure 1) and simultaneously to investigate the influence of the newly developed bioreactor system on tissue formation.

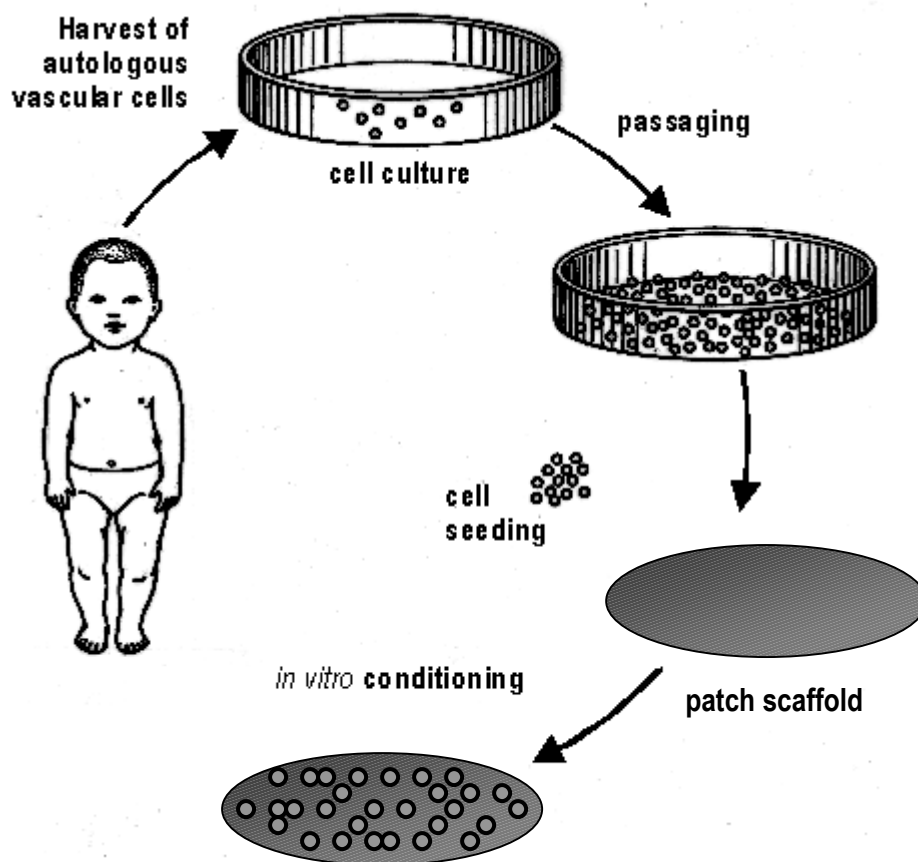


Figure 1 Tissue engineering of a patch using human vascular cells. The human vascular cells are collected and cultured. Subsequently the patch scaffold is seeded with cells and conditioned in a static or dynamic system.