Diploma work:

Recombinant spider silk as scaffold for cell culture

Background:
Since ancient times spider silk has fascinated man because of its elegant way to combine strength and elasticity, and it has also been ascribed abilities to stop bleedings and promote wound healing. Recently, we developed a method for production of a soluble recombinant miniature spider protein, 4RepCT, that spontaneously forms fibers resembling native spider silk. Except fibers, 4RepCT can also be processed into other formats such as film and 3D foam. These different formats have been shown to be possible to use as scaffolds for culturing of cells. Since 4RepCT is produced recombinantly it is also possible to functionalize the protein with various motifs that cell recognize and bind to.

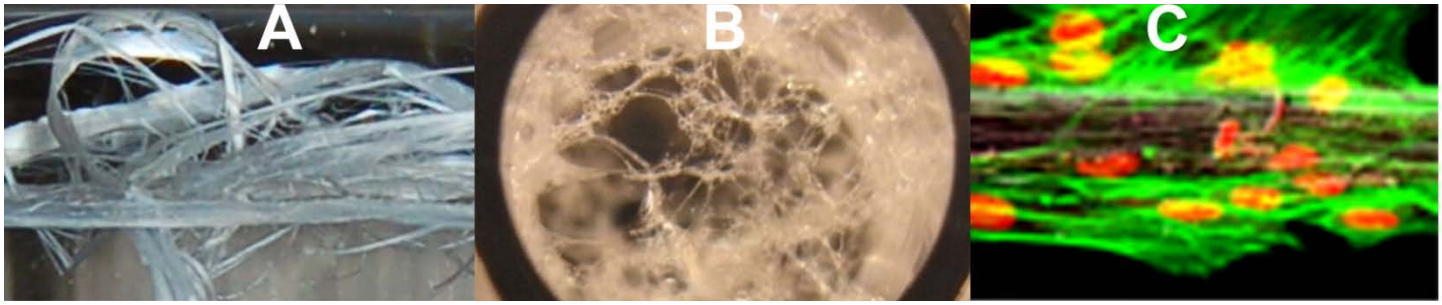

Figure 1. Recombinant spider silk used for development of cell scaffolds:
A) Fibre. B) Foam scaffold in a cell culture plate. B) Human primary fibroblasts grown on a fibre.

Aims:
This project aims at evaluating different functionalisations of spider silk and how this strategy can be use to develop scaffolds for culturing of different cell types.

Methods:
During the project several important biotechnology methods will be utilized e.g: recombinant protein expression and purification, scaffold formation, cell culture and cell analyses.

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