

Formation of capillaries and micro-vessels in 3D cultures supported by recombinant spider silk

Master Thesis project available autumn 2019 at KTH Biotechnology, AlbaNova

Background

Spider silk is a protein-based material with combined strength and elasticity. A partial spider silk protein, 4RepCT, can be recombinantly produced in *E. coli* and still maintain the ability to assemble into three-dimensional (3D) silk scaffolds. We have recently developed a method to create tissue-like constructs, such as 3D networks with integrated mammalian cells (Fig. 1). These structures may also contain a fraction of endothelial cells with the ability to develop a vascularized network.

Aim

To develop a stable macro-sized and vascularized tissue model using recombinant spider silk in 3D and endothelial cells, *i.e.* human dermal microvascular endothelial cells. The goal is to construct a part of a 3D model for *in vitro* drug screening studies.

Methods

During the project several important techniques will be utilized *e.g.* mammalian cell culture, silk formation, cell proliferation analysis, cryo-sectioning and immunostaining.

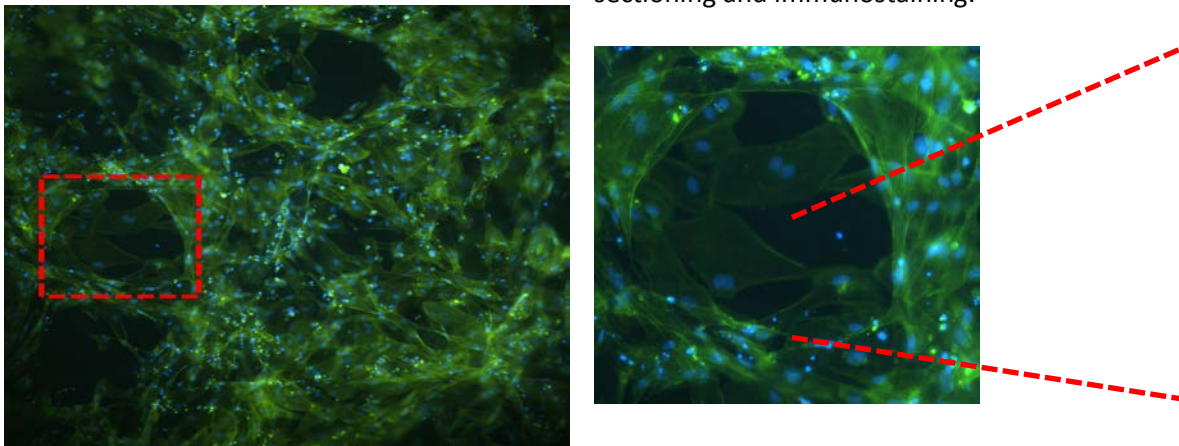


Figure 1. Recombinant spider silk in foam format with integrated endothelial cells

If you are interested, please contact:

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