

## ***Engineering bone tissue with spider silk***

**Master Thesis project available Spring 2017 at KTH Biotechnology, AlbaNova**

### **Background**

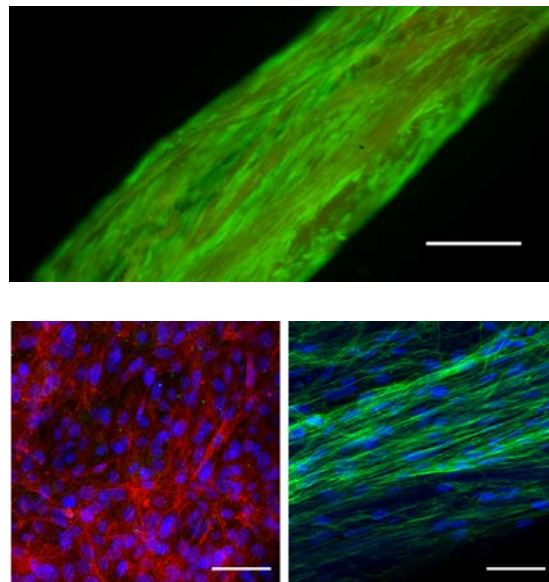
Spider silk has an elegant way of combining strength and elasticity into a protein-based material. A miniature spider silk protein, 4RepCT, can be recombinantly produced in *E. coli* and still maintain the ability to spontaneously form silk-like fibers. We have recently developed a method to create tissue-like constructs in the format of fibers with integrated mammalian cells (Fig. 1). Such fibers containing mesenchymal stem cells (MSC) can be differentiated into bone-like tissue.

### **Aims**

This project aims at further developing the method, to engineer bone-like fibers by inclusion of biomimetic mineralization and differentiation of MSCs towards osteoblasts.

### **Methods**

During the project several important methods will be utilized *e.g.* mammalian cell culture, silk formation, cell proliferation analysis, differentiation of cells, cryosectioning, Live/dead-- and immunostainings.



***Figure 1. Recombinant spider silk with integrated viable cells***

If you are interested, please contact:

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