

P001 Characterisation of recombinantly produced flagelliform silk

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Orb web weaving spiders are able to produce up to seven different silks some of which show outstanding mechanical properties like elasticity and high tensile strength. Flagelliform silk is used in the web as capture core spiral in which elasticity is required to absorb the impulse of flying prey. Flagelliform silk consists of one protein with a highly repetitive sequence flanked by two non-repetitive regions. A highly concentrated solution of this secreted protein is stored in the flagelliform gland. Changing salt concentrations and pH in the spider's spinning duct and finally mechanical drawing lead to the assembly of protein molecules into the silk thread.

In order to investigate the assembly mechanism of flagelliform silk, a derivative was recombinantly produced in *Escherichia coli*. Certain salt and pH conditions were investigated to check their influence on solubility of the protein. It could be shown that in solution the repetitive part of the protein remains unstructured. Upon a change in salt conditions the protein started to assemble. The gained knowledge will be employed to unravel the natural assembly mechanism of flagelliform silk proteins.