Recombinant spider silk protein expression through engineered *Escherichia coli*.

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Naturally found spider silk and elastin protein attract attention due to its outstanding physical properties coming from the highly repeated structure and size. However, the exceptional structure and size limits expression in heterologous hosts, where the repetitive sequences in mRNA create extensive secondary structures. And these structures decrease ribosome processivity and assist mRNA degradation. Using the naturally found protein, spider dragline silk protein, we present techniques to solve biological problems that occurred: using metabolic engineering and increasing the cellular resource, more specifically, particular amino acid tRNA pool. Newly synthesized native-size spider dragline silk protein produced increased titer than those reported previously, therefore proving that the strategies used were efficient. The results provide insight into approaches to control expression of recombinant proteins containing high molecular weight and highly repetitive sequence.
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