Enhanced production of synthetic spider dragline silk protein in *Escherichia coli*

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Naturally found spider silk, showing highly repeated structure and extreme size as well as strength, show attraction to many industrial applications. However, these characteristics hinder its expression in heterologous hosts by creation of extensive secondary structure from the repetitive sequences in mRNA, and the structures decrease ribosome processivity and facilitate mRNA degradation. We present strategies to solve biological problems that occur using the naturally found protein, spider dragline silk protein: increasing available ribosome pool and stabilizing mRNA to stop degradation. From the results, we were able to provide insight into approaches to control translation efficiency of proteins containing high molecular weight and highly repetitive sequence. [This work was supported by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries (NRF-2012-C1AAA001-2012M1A2A2026556) and the Intelligent Synthetic Biology Center through the Global Frontier Project (2011-0031963) of the Ministry of Education, Science and Technology (MEST) through the National Research Foundation of Korea.]