

Use of metabolic engineering for production of recombinant spider silk proteins

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Native size spider silk protein has attracted much attention due to its outstanding physical properties. However, their size and repetitive sequences in mRNA often limit expression in heterologous hosts due to decreased ribosome processivity and mRNA degradation. This study presents various metabolic engineering techniques as well as decreasing RNase to assist in the production of these proteins. This method produced higher concentrations of native-size spider dragline silk protein than those reported previously and provides insight into approaches to control expression of useful recombinant proteins containing high molecular weight and repetitive sequences. [This work was supported by the Technology Development Program to Solve Climate Changes on Systems Metabolic Engineering for Biorefineries from the Ministry of Science, ICT and Future Planning (MSIP) through the National Research Foundation (NRF) of Korea (NRF-2012M1A2A2026556 and NRF-2012M1A2A2026557); 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]