

### Enhancement of mussel-originated silk-like protein expression using baculoviral polyhedron

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Recombinant spider and silkworm have been studied as silk materials for several decades. Even though bees and ants have been focused as new silk-bearing organisms, the research for silk proteins from other organisms is rare. Especially, there is no precedent about silk-like proteins from marine organisms. Comparing with the silk genes from spider and silkworm, we found that marine mussel has silk-like gene that consists of many repeats with abundance of glycine and alanine. We designed mussel-derived silk gene which contains alternating repeated (hydrophobic) and non-repeated regions. Because we observed prominent retardation of cell growth by expression of mussel silk-like protein, fusion strategy with the baculoviral polyhedrin was used to induce insoluble expression of target silk protein. Finally, we could express the mussel silk-like proteins as insoluble form with high cell growth.