Recombinant mussel adhesive protein: Novel and potent non-viral gene delivery material

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Efficient target gene delivery into eukaryotic cells is important for biotechnological research and gene therapy. Gene delivery based on proteins and peptides has recently emerged as a powerful non-viral DNA transfer technique. We investigated the potential use of a recombinant mussel adhesive protein, hybrid fp-151, as a gene delivery material, in view of its basic amino acid composition, cost-effective and high-level production in *Escherichia coli*. After confirming DNA binding affinity, we transfected mammalian cells (human 293T and mouse NIH/3T3) with foreign genes using hybrid fp-151 as the gene delivery carrier. Hybrid fp-151 displayed comparable transfection efficiency in both mammalian cell lines, compared to the widely used transfection agent, Lipofectamine™ 2000. Our results indicate that this mussel adhesive protein may be used as a potential protein-based gene-transfer mediator.