

Efficient expression of small peptides in a cell-free protein synthesis system

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Despite their clinical and industrial demands, biological production of small peptides has suffered extremely low productivity. In this report, we describe a method for enhancing the expression level of a peptide in a cell-free protein synthesis system. Briefly, through the fusion of the target genes (β -defensin 2 and human epidermal growth factor) with an appropriately engineered downstream box, the productivity of soluble peptides increased remarkably. Moreover, the 'open' nature of cell-free synthesis enabled the in situ removal of the extra amino acid residues from the down stream box. By directly using the PCR-amplified genes as the templates for cell-free protein synthesis, the entire process for the expression of target genes was completed in 7 hours.