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J Biotechnol Biomater 2018, Volume 8
DOI: 10.4172/2155-952X-C8-110

Use of 3'-untranslated region of messenger RNA from measles virus matrix protein as a stabilizing cis-element for increased protein production yields

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The market for the use of recombinant proteins for medical applications has been increasing in recent years. Expression vectors are one of the decisive factors in the cost-effectiveness of the production process of recombinant proteins. The genetic factors found at the 3'untranslated region of mRNA expressed by such vectors, play an important role in determining its stability and thus in the efficiency of the recombinant protein production process. We studied the effect of 3'UTR of matrix protein mRNA from measles virus on mRNA stability by a GFP-based reporter construct in three cell lines. Application of 3'UTR of matrix protein mRNA from measles virus increased the GFP-mRNA stability in a time and cell dependent manner. Analysis of the 3'UTR of matrix protein mRNA from measles virus for presence of known cis-acting motifs indicated the occurrence of two PABPC1 binding sites, known for its stability and translation enhancing effects. Our results verified the potentiality of 3'UTR region of matrix protein mRNA for improvement of recombinant protein production and vector design for mammalian cell hosts.

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