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(54) Title: INTERNAL RIBOSOME ENTRY SITE (IRES), PLASMID VECTOR AND CIRCULAR MRNA FOR ENHANCING PROTEIN EXPRESSION

(57) Abstract: The present invention relates to a plasmid vector for making an open reading frame-coding circular mRNA (ORF-coding circular mRNA) having a small backbone, optimized homology arms and internal ribosome entry site (IRES) that encodes an efficient open reading frame (ORF), resulting in highly efficient protein expression. The IRES has also been developed to promote the translation of proteins of interest, thus improving protein expression. The plasmid vector and ORF-coding circular mRNA according to this invention can overcome previous technical challenges due to its optimized constructs and small size, resulting in ease of delivery, stability in the cell, and significantly higher translation efficiency and protein expression in vivo. When applied in medicine or pharmaceutical preparations, the circular mRNA described in the present invention can potentially reduce the frequency of administration and/or doses required, resulting in fewer unwanted side effects and improved patient access to medicines.