ABSTRACT

The present invention enables simultaneous and stable expression of a plurality of foreign genes by using a stealthy RNA gene expression system that is a complex that does not activate the innate immune mechanism and is formed from an RNA-dependent RNA polymerase, a single-strand RNA binding protein, and negative-sense single-strand RNAs including the following (1) to (8): (1) a target RNA sequence that codes for any protein or functional RNA; (2) an RNA sequence forming a noncoding region and derived from mRNA expressed in animal cells; (3) a transcription initiation signal sequence recognized by the RNA-dependent RNA polymerase; (4) a transcription termination signal sequence recognized by the polymerase; (5) an RNA sequence containing a replication origin recognized by the polymerase; (6) an RNA sequence that codes for the polymerase and of which codons are optimized for the species from which an introduction target cell is derived; (7) an RNA sequence that codes for a protein for regulating the activity of the polymerase and of which codons are optimized for the species from which the introduction target cell is derived; and (8) an RNA sequence that codes for the single-strand RNA binding protein and of which codons are optimized for the species from which the introduction target cell is derived.