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(54) Title: METHODS FOR CREATING AND IDENTIFYING FUNCTIONAL RNA INTERFERENCE ELEMENTS

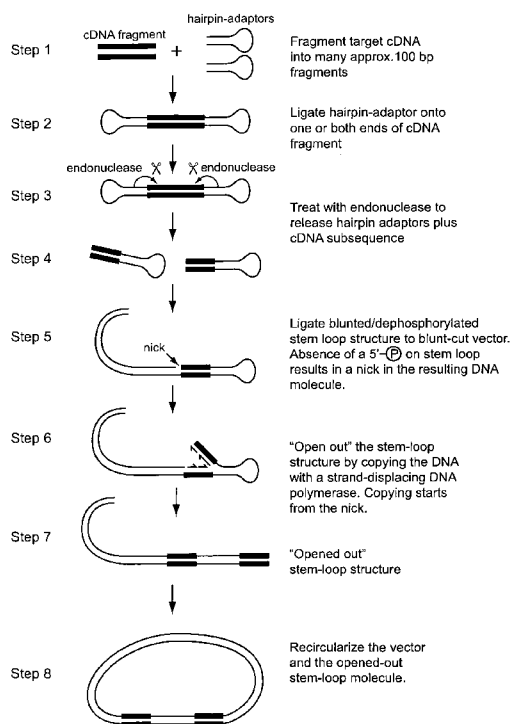


Fig. 1

(57) Abstract: The invention relates to the control of gene expression. Specifically, the invention provides compositions and methods for the production and use of recombinant nucleic acid molecules that have the ability to specifically downregulate an expressed target gene *in vivo*. In some aspects, the invention provides methods for producing a hairpin DNA molecule where part of the molecule is derived from an mRNA that is a target for a small interfering RNA (siRNA) derived from the hairpin. In other aspects, the invention provides synthetic hairpin adapter oligonucleotides that are used in the construction of siRNA-producing cassettes. In other aspects, the invention provides methods for testing for the presence or absence of specific inhibitory activity of an RNAi trigger molecule, and in still other aspects, the invention provides methods for identifying an active RNAi trigger molecule from a library of RNAi trigger molecules. In still other aspects, the invention provides methods for identifying a polynucleotide from a plurality of candidate target polynucleotides that is specifically targeted by an RNAi trigger molecule. In other aspects, the invention provides epi-allelic series of hypomorphic RNAi trigger molecules specific for any gene of interest, where the series of RNAi trigger molecules have a variety of uses including analysis of gene function and drug target development.



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