

Platform for Efficient siRNA Screen and Production

Health & Wellness

Biomedical and Genetic Engineering

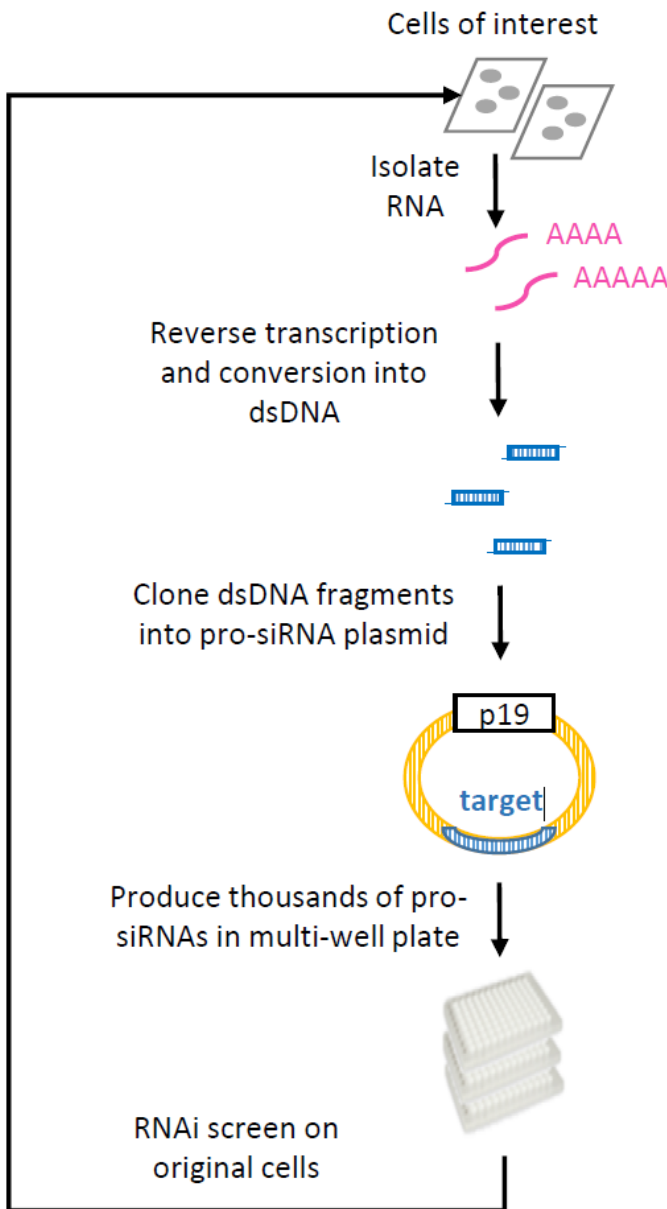


Figure 1. Schematic of pro-siRNA-based RNAi screen method.

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Opportunity

RNA interference (RNAi) is an evolutionarily conserved biological process existing in many eukaryotic cells. During the process, short double stranded RNA molecules (also siRNA) down regulate gene expression typically by inducing the degradation of homologous messenger RNAs(mRNAs). The pro-

Remarks

Inventions Geneva
Evaluation Days (IGED)
2022 - Gold Medal

IP Status

Patent granted



Technology Readiness
Level (TRL) ?

7

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Develop
concept

Proof
Concept

Build Value

siRNA screen is a “personalized” functional diagnostic tool for the identification of disease-causing genes. In addition, pro-siRNAs can become “personalized” drug targets for disease therapy. The method with low cost and easy adaptable to an industrial setting for producing various pro-siRNAs library and for large scale production of pro-siRNAs as RNAi therapeutics is highly demanded. Novel siRNA design and production system is with strong market potential.

Technology

The system utilizes the unique function of the protein P19, which has the ability to bind to and stabilize 21-nt double stranded RNA species produced by endogenous RNase III in Escherichia coli, producing a pool of siRNAs within a certain selected gene sequence, which are called pro-siRNA.

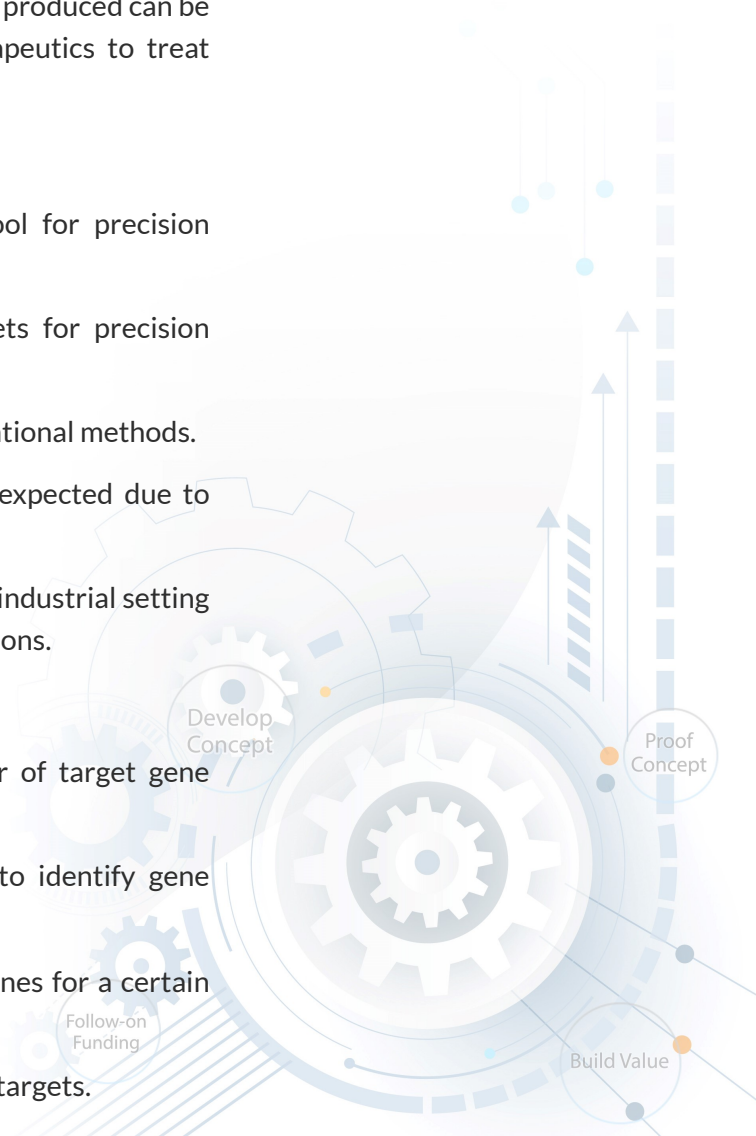
A brand-new platform for RNAi screen based on the pro-siRNA technology. RNAi screen is a powerful tool to identify the genetic basis for various biological pathways. Our method enables the make of pro-siRNA library targeting the entire transcribed genome under any biological condition and from any species. Pro-siRNA can be used for genome-wide loss-of-function analysis to identify essential genes for a particular biological pathway or a disease process. The identified candidate pro-siRNA can be produced in large quantity using bacterial fermentation. The pro-siRNAs produced can be used as tools for biomedical research and as RNAi therapeutics to treat certain disease.

Advantages

- The pro-siRNA screen is a “personalized” diagnosis tool for precision therapy.
- The pro-siRNAs can become “personalized” drug targets for precision therapy.
- The gene screening system are more efficient than conventional methods.
- Minimal false positive rate and false negative rate are expected due to multivalent nature of pro-siRNAs.
- The method can be of low cost and easily adaptable to an industrial setting for producing various libraries and for large scale productions.

Applications

- The pro-siRNA screen technology integrates the power of target gene identification with the ability of in vivo gene manipulation.
- The system can be used as a powerful research tool to identify gene functions in a biological pathway.
- The system can be applied to identify disease causing genes for a certain disease like cancer.
- The candidate genes identified by the system can be drug targets.



- The identified pro-siRNAs potentially can be made into RNAi drugs for treating that disease.

