Custom *in vitro* siRNA Design and Synthesis Services

Two pairs of target gene siRNA (~26µM x 100µl/pair)/$559  
Three pairs of target gene siRNA (~26µM x 100µl/pair)/$699  
Supplied with a negative control siRNA

**Introduction:**

Small interfering RNA (also named as short interfering RNA or silencing RNA) (siRNA) is a kind of double-stranded RNA molecules (20-25 nucleotides in length). They are identical to the sequence of target gene. Supplement of the double stranded RNA can suppress the target gene's expression through a process known as RNA interference (RNAi). This post-transcriptional process silences a gene through mRNA inhibition or degradation. siRNA technology is more and more popular method for gene specific inhibition in biomedical research.

Our siRNA synthesis service is based on *in vitro* transcription techniques and the silencer® siRNA Construction kit (Ambion). Dependent upon the custom gene sequence we will design two pairs of template oligonucleotides (sense and antisense), which contain 21 nt target gene encoding and a short sequence complementary to the T7 Promoter Primer. These two template oligonucleotides are then hybridized to a T7 Promoter Primer and extended by the Klenow fragment of DNA polymerase to create double-stranded siRNA transcription templates. These sense and antisense siRNA templates are subsequently transcribed by T7 RNA polymerase to create corresponding double-stranded RNA (dsRNA). After modification with single-strand specific ribonuclease and purification with glass fiber filter, the remained sequences with UU at 3’-terminal are the siRNAs. Those oligomers can be directly transfected into target cells to suppress corresponding gene expression.

**Features and Benefits:**

- Target gene suppression up to 95%. At least 1 of 3 siRNA provides 80%-95% silencing in most mammalian cells.
- High quality 21-mer siRNA duplex is ready in fast turnaround times.
- Ready-to-use *in vitro* siRNA oligomers can be transfected directly into target cells.

**[Necessary information and materials:]**

Information from customer: Target protein (gene's name, gene's reference number, or mRNA sequence).

Transfection reagent: Lipofectamine 2000 (Invitrogen), Silencer® siRNA Transfection II Kit (Ambion), TransIT-TKO (Mirus), SuperFact (Qiagen), or other kind of transfection reagent (such as PEI, etc.)

**[Transfect procedure:]**

The best working concentration of the siRNA for transfection is 0.1-10nM. The transfection processes can follow the product manual of the transfection reagent.

Please contact us at following e-mail: Sam.lee@zmtechscience.com for project quotation and timeline estimate.
Overview of siRNA design and synthesis procedure:

1. Two 29-mer DNA oligonucleotides are designed, synthesized and desalted.
2. A T7 Promoter Primer was added to the oligonucleotides and the 3’ end extended by Klenow DNA Polymerase.
3. The sense and antisense siRNA template are transcribed by T7 RNA polymerase and hybridization.
4. RNase Digestion and DNA clean up.
5. The siRNA are further purified by glass fibre filters and the concentrations are optimized for transfection.
6. The high quality 21-mer siRNA duplex is ready to transfect into mammalian cells.

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