

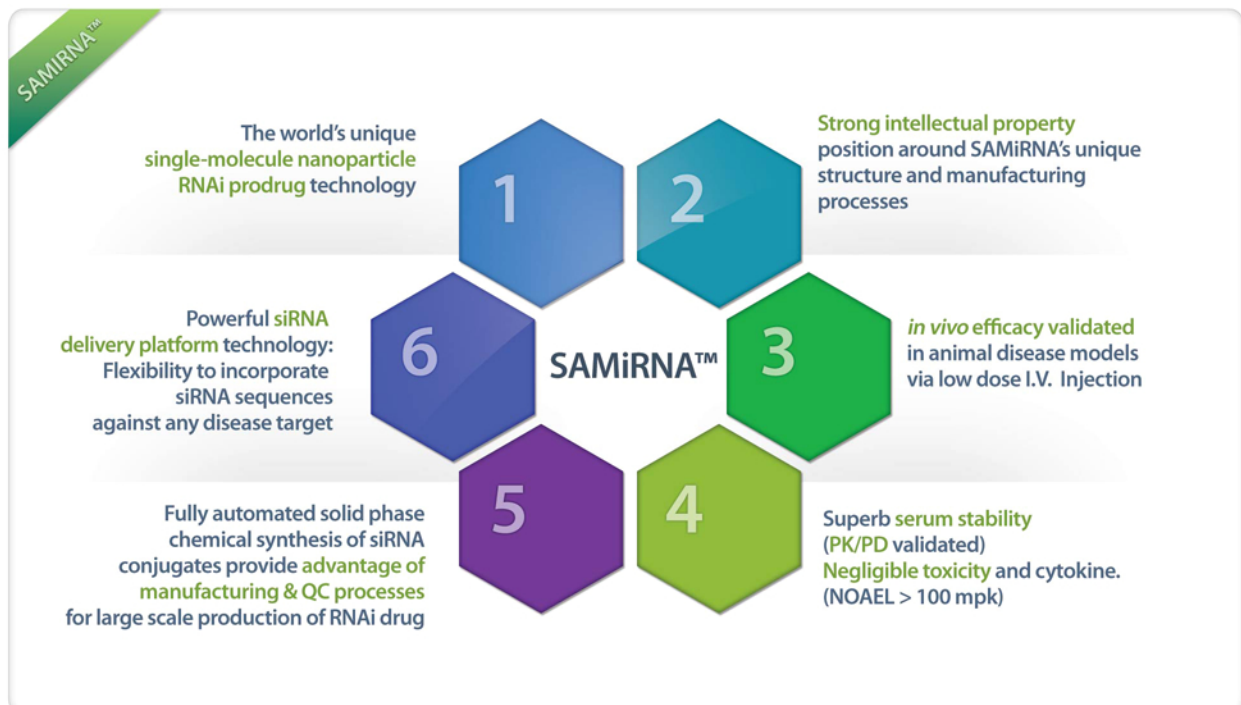
Bioneer
Healthier Future for
Humanity with
Genomic Technology

BIONEER's complete solution for translational *in vivo* siRNA studies

SAMiRNA™ Custom Service

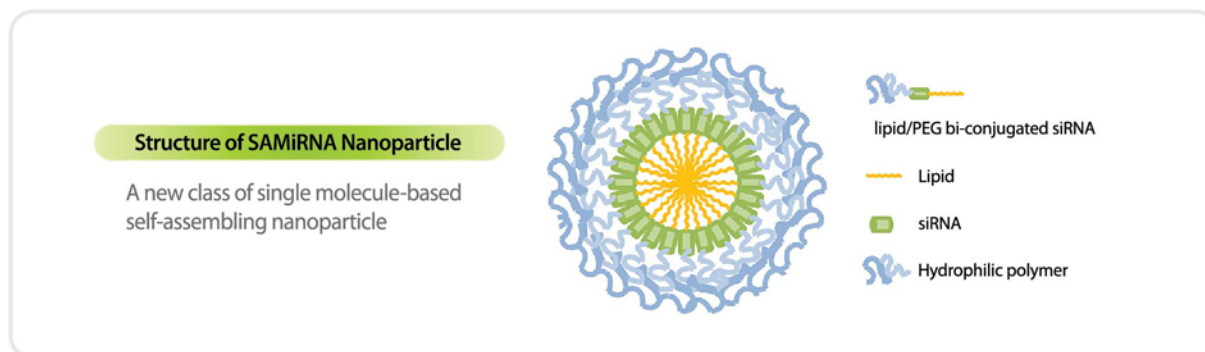
(Self-Assembled-Micelle-inhibitory-RNA)

- Effective knockdown
- Negligible toxicity
- High specificity
- Long stability
- Cost effective



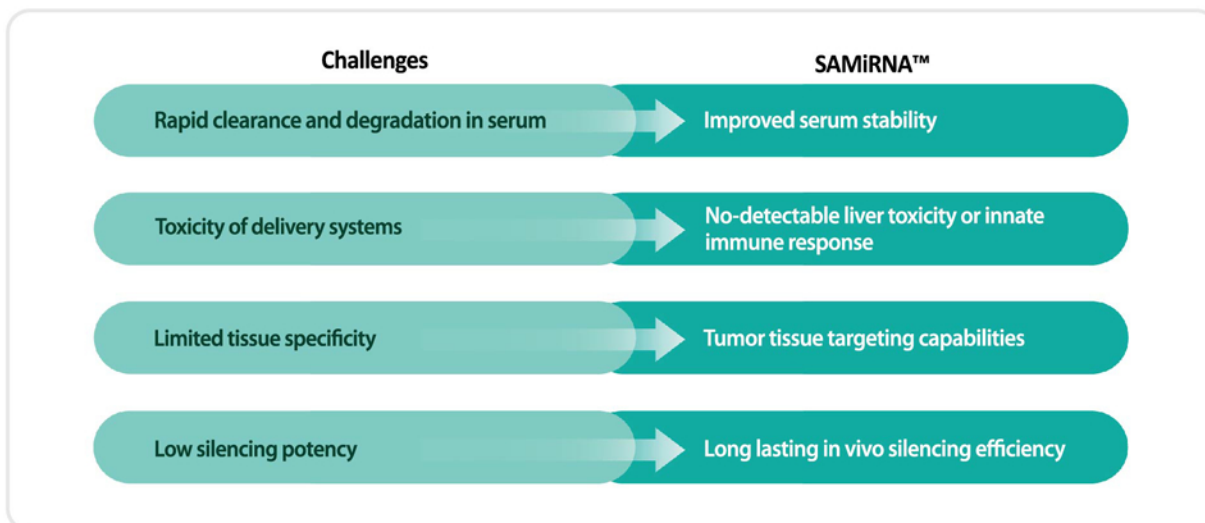
What is SAMiRNA? ●●●

SAMI RNA™ is a novel siRNA molecule conjugated with lipid and hydrophilic polymer, which spontaneously forms stable nanoparticles and optimized for systemic delivery without any other reagent and formulation process. With this feature, SAMiRNA™ nanoparticles incorporate siRNA, miRNA or even antisense oligonucleotide, with the ideal size for selective localization in either vascularized tumors via Enhanced Permeability and Retention (EPR) effects or for targeting tissues through the addition of ligand moieties on the surface of SAMiRNA™.



Why SAMiRNA? ●●●

Delivery challenges are overcome by SAMiRNA™ technology.



One of the major obstacles in the development of RNA interference (RNAi)-based therapeutics is siRNA/miRNA delivery to target cell in vivo. SAMiRNA™ is a novel class of RNAi molecule developed by Bioneer, which provides the solution for virtually all major difficulties in the development of RNAi-based therapeutics such as siRNA delivery.

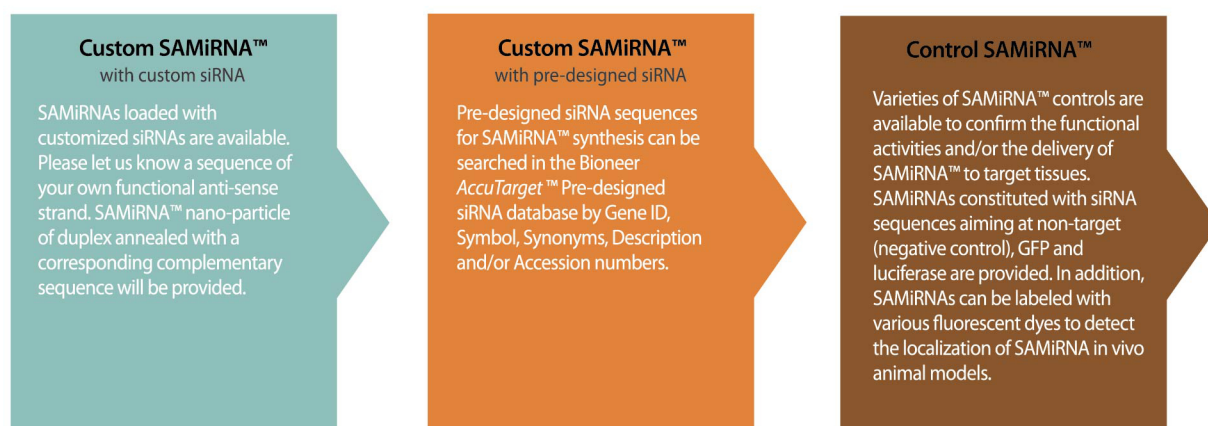
The therapeutic potential of SAMiRNA™ is highlighted by virtue of its negligible toxicity and superb in vivo serum stability as well as its long lasting target gene silencing efficacy proven in various cancer and lung fibrosis animal disease models. In addition, SAMiRNA™ has been shown to induce no innate immune response in human PBMC test and high dose-administrated rodent models. These data indicate SAMiRNA's exceptional therapeutic potential as an RNAi platform targeting for various diseases in vivo.

SAMI_{RNA}™ Custom Service ●●●

To go through this process, customers can place an order for SAMI_{RNA}™ containing siRNA sequences of targeting your gene of interest, by filling forms from online. Once received, you simply resuspend and perform animal efficacy tests using this novel SAMI_{RNA}™ nanoparticle technology.

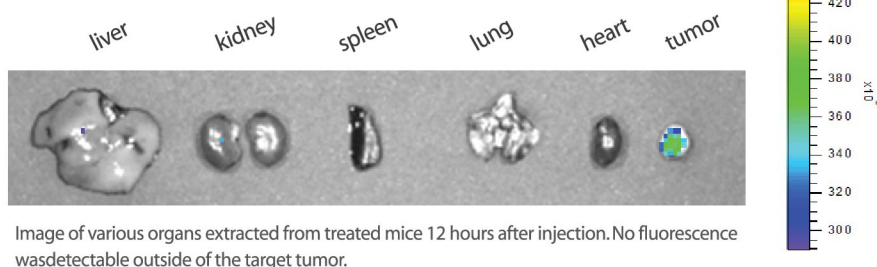
If customers want to get the empirically validated siRNAs with highest knockdown efficiency, the recommendation is to consider “in vitro screening and validation service”, in lieu of in silico. This option allow obtaining up to 100 siRNAs aiming specific mRNAs of interest, which are transfected into cells individually, and the knockdown efficiencies are ranked by RT-qPCR results. Most potent siRNAs are made as SAMI_{RNA}™ nanoparticles and revalidated in vitro before shipment. (see options below).

In all, what we offer is a complete solution for RNAi gene silencing studies encompassing siRNA, miRNA, in vivo si-/miRNA using SAMI_{RNA}. This is due to our research and technical support team ensures the top-quality products, services and world class expertise in nucleic acid manufacturing and applications.



- **Simplicity**: No additional reagents required
- **Safety**: No innate immune response or liver toxicity detected (NOAEL at least 100 mg/kg)
- **Stability**: Highly stable with lyophilized powder or resuspended solution
- **Specificity**: Verified capability targeting tumors (Figure 1.)

Figure 1. Tumor-specific targeting of SAMI_{RNA}™ in mouse cancer models

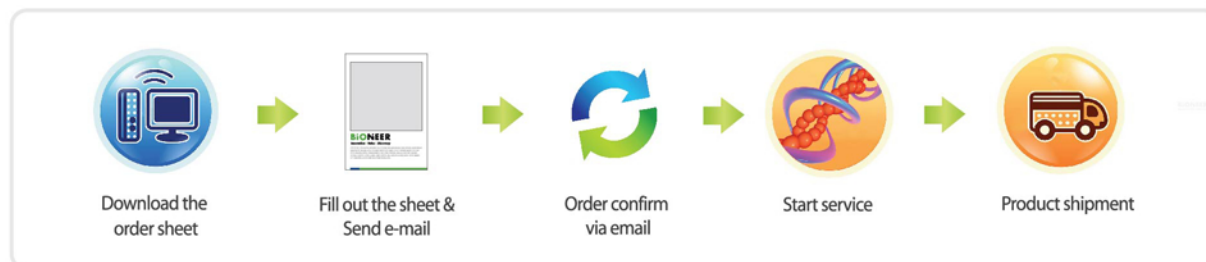


Quotations and ordering ●●●

Bioneer's SAMiRNATM Custom Service is provided through SAMiRNATM ordering system with a comprehensive service package. Please let us know the details of your project, so that we can provide you with an accurate quotation and a timeline estimate.

• Process

SAMITMRNA is synthesized by incorporating siRNA sequence(s) into SAMiRNATM platform. siRNA sequences can be picked from either custom siRNAs or Bioneer's pre-designed siRNA pool.



• Ordering information

SAMI TM RNA	Order scale (nmole)	Number of mouse (intravenous injections)	
Custom SAMiRNA	100	5 mg/kg -> 5 mice	1 mg/kg -> 25 mice
	500	5 mg/kg -> 25 mice	1 mg/kg -> 125 mice
	1000	5 mg/kg -> 50 mice	1 mg/kg -> 250 mice
Control SMAiRNA	100	5 mg/kg -> 5 mice	1 mg/kg -> 25 mice
	500	5 mg/kg -> 25 mice	1 mg/kg -> 125 mice
	1000	5 mg/kg -> 50 mice	1 mg/kg -> 250 mice
Fluorescence conjugated SAMiRNA (FITC, Cy5.5 etc)	100	5 mg/kg -> 5 mice	1 mg/kg -> 25 mice
	500	5 mg/kg -> 25 mice	1 mg/kg -> 125 mice
	1000	5 mg/kg -> 50 mice	1 mg/kg -> 250 mice

* The formation of SAMiRNA nano-particle will be guaranteed upon re-suspension by providing QC data regarding the size and PDI information of the nano-particle.

• Technical support

Phone: +82-42-930-8777 E-mail: SAMiRNA-support@bioneer.com

NOTICE TO PURCHASER: LIMITED LICENSE

These products are for research purpose only. They are not for diagnostic or therapeutic purpose and are not to be administered to humans.

Use of SAMiRNA is covered by U.S. patents Nos. 8,779,114, 8,771,976, and their foreign counterparts or pending patents. The purchase of these products includes a limited, non-transferable immunity from suit under the forgoing patents for using only this amount of product solely for the purchaser's own internal research. No other patent rights to use this product for any other purpose or for commercial purpose, including without limitation reporting the results of purchaser's activities for a fee or other commercial consideration, are conveyed expressly, by implication, or by estoppel. Further information on purchasing licenses may be obtained by contacting Bioneer at licensing@bioneer.com

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