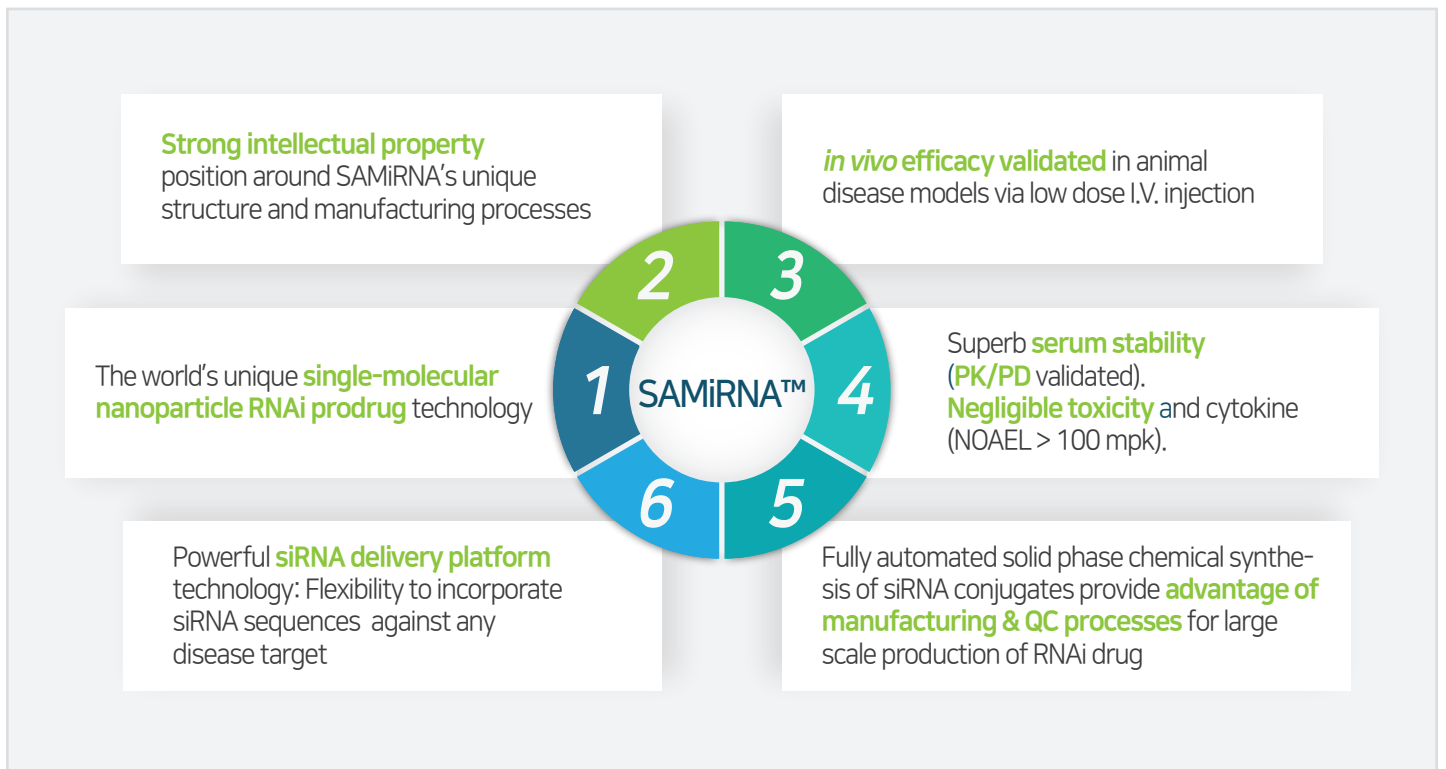


BIONEER's complete solution for
translational *in vivo* siRNA studies

SAMiRNA™ Custom Service

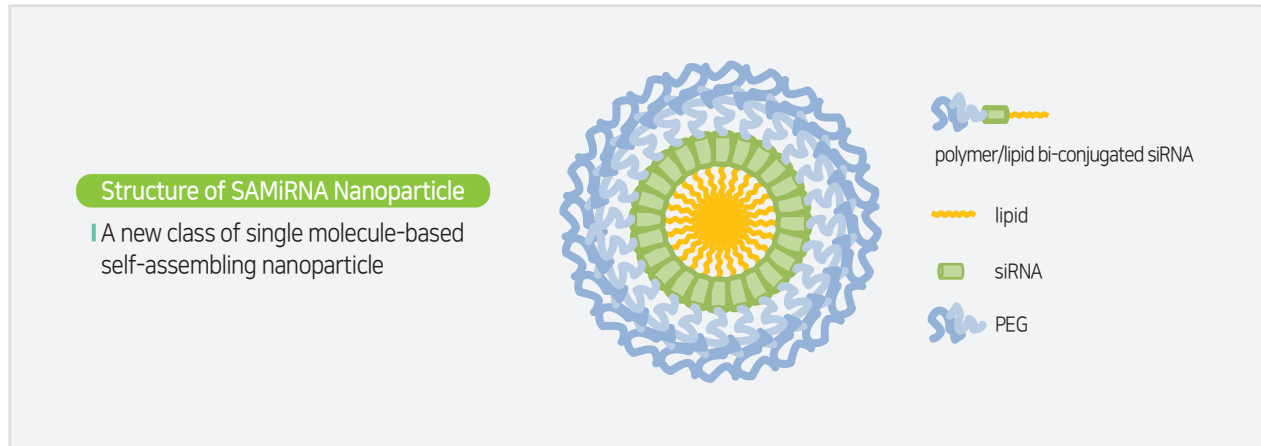
Self-Assembled-Micelle-inhibitory-RNA

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



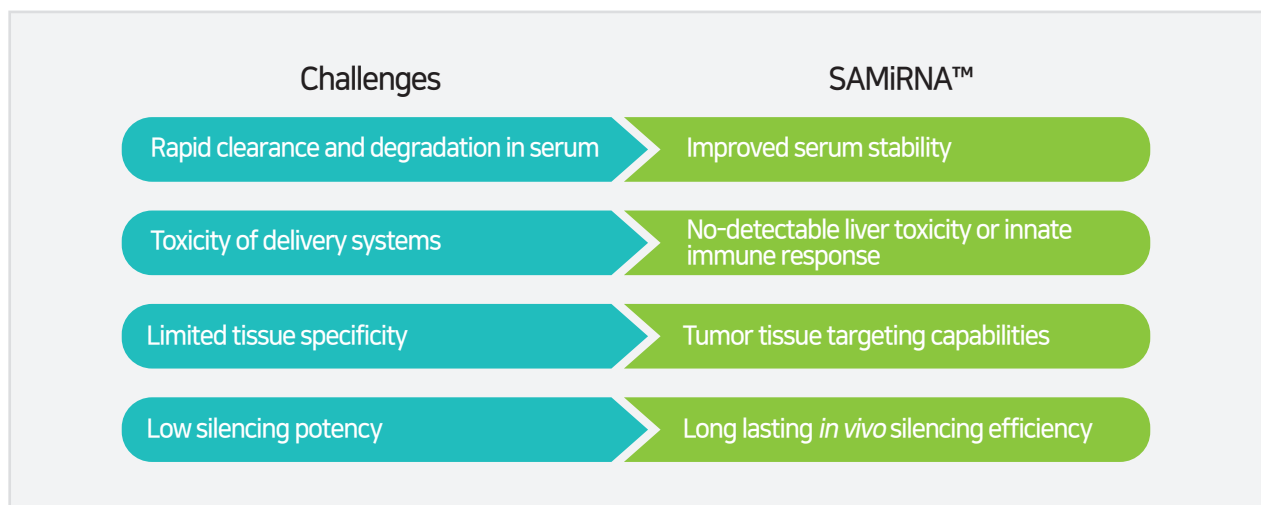
What is SAMiRNA?

SAMiRNA™ 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*.

SAMiRNA™ Custom Service

To go through this process, customers can place an order for SAMiRNA™ 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 SAMiRNA™ 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 are transfected into cells individually, and the knockdown efficiencies are ranked by RT-qPCR results. Most potent siRNAs are made as SAMiRNA 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 SAMiRNA. 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.

Custom SAMiRNA™ With custom siRNA

SAMiRNAs loaded with customized siRNAs are available. Please let us know a sequence of your own functional anti-sense strand. SAMiRNA™ nano-particle of duplex annealed with a corresponding complementary sequence will be provided.

Custom SAMiRNA™ With pre-designed siRNA

Pre-designed siRNA sequences for SAMiRNA™ synthesis can be searched in the Bioneer *AccuTarget™* Pre-designed siRNA database by Gene ID, Symbol, Synonyms, Description and/or Accession numbers.

Control SAMiRNA™

Varieties of SAMiRNA™ controls are available to confirm the functional activities and/or the delivery of SAMiRNA™ to target tissues. SAMiRNAs constituted with siRNA sequences aiming at non-target (negative control), GFP and luciferase are provided. In addition, SAMiRNAs can be labeled with various fluorescent dyes to detect the localization of SAMiRNA™ *in vivo* animal models.

- ◉ **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)

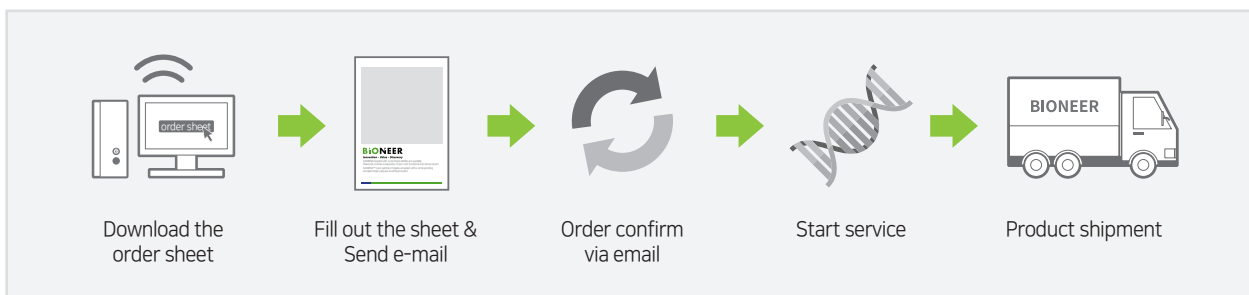


Quotations and ordering

Bioneer's SAMiRNA™ Custom Service is provided through SAMiRNA™ 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

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



Ordering information

SAMIrNA	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 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
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: siRNA-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 estoppels. Further information on purchasing licenses may be obtained by contacting Bioneer at licensing@bioneer.com

SAMIrNA™ is a trademark of Bioneer Corporation.

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