

High-Efficiency siRNA Transfection Reagent

Cat. No.: T751606 | Pack size: 100 μ L; 500 μ L; 1 mL | Storage: 2-8°C; do not freeze

Overview

The High-Efficiency siRNA Transfection Reagent is an ultra-high efficiency and low toxicity transfection reagent. It can form complexes with nucleic acids such as mRNA and siRNA. In in vitro experiments, it achieves high transfection efficiency in various hard-to-transfect cell lines including A549, MCF-7, PC12, 4T1, and RAW264.7. In in vivo experiments, it selectively targets the lungs of normal tumor-free mice and enables high-efficiency gene expression. This product is supplied as a sterile liquid.

Under normal circumstances, using the recommended dosage, 1 mL of this reagent can transfect approximately 40 wells of a 6-well plate, 200 wells of a 24-well plate, 1000 wells of a 96-well plate, or be used for 15 mice (with a body weight of 20 g). User Guide: For efficient siRNA transfection reagents, store at 4°C under sealed conditions; transport using ice packs (wet ice).

Product Components and Storage Conditions:

T751606	Components	100 μ L	500 μ L	1 mL	Storage
T751606A	High-Efficiency siRNA Transfection Reagent	100 μ L	500 μ L	1 mL	2-8°C
T751606B	Transfection Buffer	1 mL	5 mL	2×5 mL	2-8°C

Experimental Materials:

- This product contains two reagents: High-Efficiency siRNA Transfection Reagent and Transfection Buffer.
- High-purity nucleic acid stock solution (0.5–5 μ g/ μ L)
- Serum-free medium (e.g., O778393 Optimal-MEM Reduced Serum Medium (with Phenol Red))

Quality Control:

- The shelf life is 1 year when stored at 4 °C.
- Strict quality inspection has confirmed that this product is free from biological contamination.

Precautions:

- Prepare the nucleic acid-High-Efficiency siRNA Transfection Reagent complex at room temperature using enzyme-free and sterile tubes, with an incubation time of 20–30 minutes.
- This product should be stored in a sealed container at 4°C and protected from repeated freeze-thaw cycles.
- For in vitro transfection, the ratio of nucleic acid concentration to High-Efficiency siRNA Transfection Reagent should be optimized during initial use to achieve the highest transfection efficiency.
- For in vitro transfection, use healthy cells that are properly preserved and regularly passaged, and ensure the medium is free from bacterial, fungal, or mycoplasma contamination. If the cells are recently revived from liquid nitrogen frozen stocks, they should be passaged at least twice before transfection.
- For in vivo transfection, in vivo transfection can be optimized by adjusting the tumor volume, the dosage and concentration of mRNA, and the dosage of High-Efficiency siRNA Transfection Reagent.
- After using the transfection reagent, tightly close the lid immediately to avoid prolonged exposure to air, which may affect transfection efficiency.

Examples of siRNA Transfection Effects in Vitro and in Vivo:

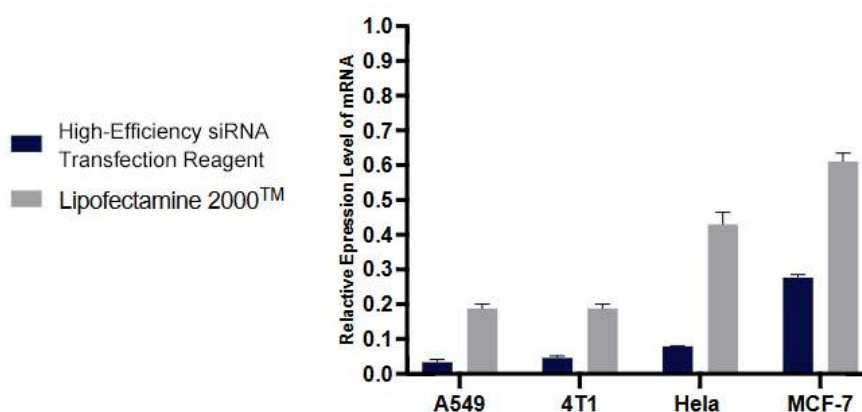


Figure 1. Gene silencing effects of siRNA delivered by the High-Efficiency siRNA Transfection Reagent and Lipofectamine 2000™ in various cell lines.

48 hours after siRNA delivery by the High-Efficiency siRNA Transfection Reagent and Lipofectamine 2000™, the relative expression levels of the target genes CCNB1 mRNA (in A549, HeLa, and MCF-7 cells) and PTEN mRNA (in 4T1 cells) compared to the housekeeping gene GAPDH mRNA were detected (24-well plate, with 0.5 µg siRNA transfected per well).

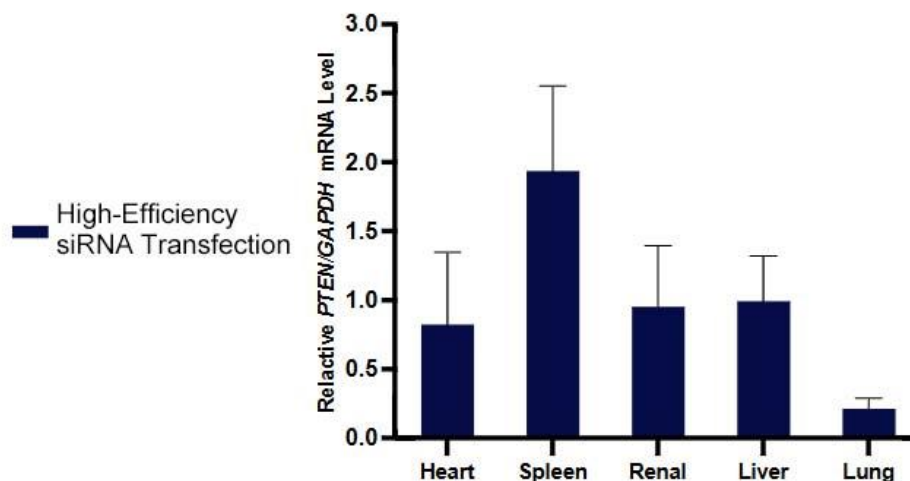


Figure 2. Gene silencing effect of siRNA delivered in vivo by the High-Efficiency siRNA Transfection Reagent.

48 hours after the assembled complex of the High-Efficiency siRNA Transfection Reagent and siPTEN was injected into C57BL/6 mice (20 g) via the tail vein, the relative expression levels of the target gene PTEN mRNA (4T1) compared to the housekeeping gene GAPDH mRNA were detected in heart, spleen, kidney, liver, and lung tissues, respectively. The relative expression level of PTEN mRNA in the lung was the lowest, with an average of 0.214, indicating the best silencing effect.

Examples of Transfection Effects of GFP mRNA and Firefly Luciferase mRNA in Vitro and in Vivo Respectively:

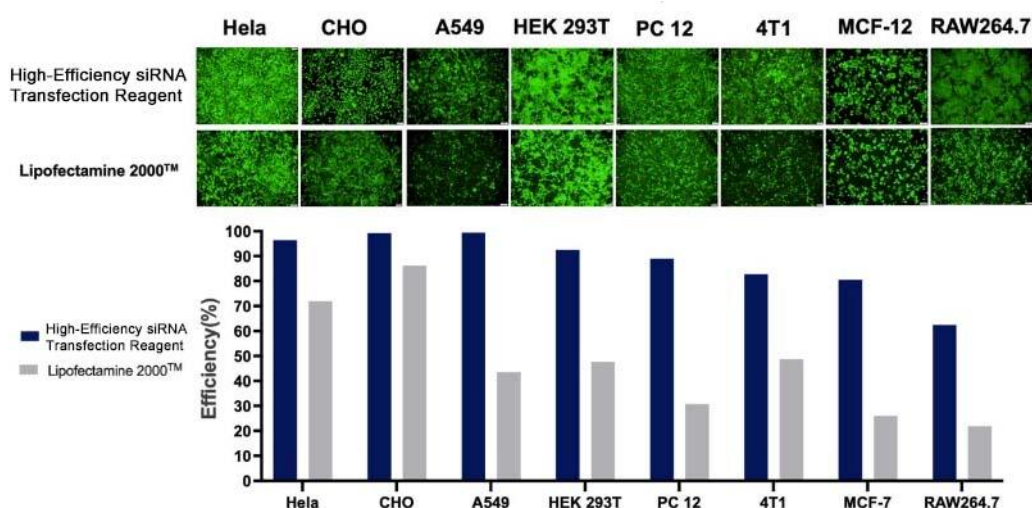


Figure 3. Expression effects of mRNA delivered by the High-Efficiency siRNA Transfection Reagent and Lipofectamine 2000™ in various cells.

48 hours after GFP mRNA was delivered by the High-Efficiency siRNA Transfection Reagent and Lipofectamine 2000™, the GFP expression effect was observed using an inverted fluorescence microscope (upper panel, scale bar = 100 μm), and the positive rate of cells expressing GFP was detected by flow cytometry (lower panel) (24-well plate, with 1 μg mRNA transfected per well).

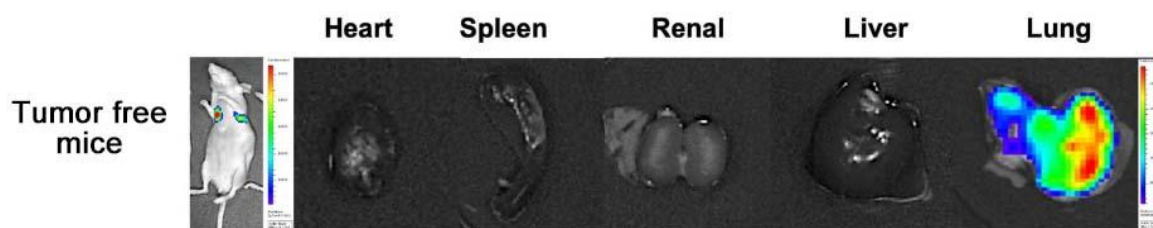


Figure 4. Gene expression effect of mRNA delivered in vivo by the High-Efficiency siRNA Transfection Reagent.

Six hours after the assembled complex of the High-Efficiency siRNA Transfection Reagent and Firefly Luciferase mRNA was injected into BALB/c-nu athymic nude mice (20 g) via the tail vein, 200 μL of d-luciferin (20 mg/mL in PBS) was injected intraperitoneally. Fifteen minutes later, the mice were sacrificed, and the organs (heart, spleen, kidney, liver, and lung) were isolated and imaged using the IVIS imaging system. The bioluminescence was mainly concentrated in the lungs, with the average ROI value of the lungs being approximately 10^7 .

For in vitro transfection, transfect cells according to the table below. Use the specified amount of nucleic acid reagents (siRNA, mRNA, etc.) and the corresponding amount of High-Efficiency siRNA Transfection Reagent. The volume of each reaction mixture refers to the volume for a single well, with pipetting variations taken into account. Calculate the volumes for other wells in proportion.

Time	Steps	Components / Detailed Steps	96-well	24-well	6-well
Days 0	① Transfect the cells when they reach a confluency of 60-80%.	Adherent cells	$1-2 \times 10^4$	$0.5-1 \times 10^6$	$1-2 \times 10^6$
Days 1	② Mix the Transfection Buffer with the nucleic acid thoroughly.	Transfection Buffer	10 μL	30 μL	120 μL
		Nucleic Acid (0.5-5 μg/μL)	0.2 μg	1 μg	5 μg
	③ Take a certain volume of High-Efficiency siRNA Transfection Reagent into an empty enzyme-free tube.	High-Efficiency siRNA Transfection Reagent	1.5 μL	7.5 μL	37.5 μL
	④ Add the nucleic acid-Transfection Buffer mixture to	Nucleic Acid-Transfection Buffer	10 μL	30 μL	120 μL

Time	Steps	Components / Detailed Steps	96-well	24-well	6-well							
	the empty enzyme-free tube containing the High-Efficiency siRNA Transfection Reagent, and pipette up and down several times to mix evenly.	High-Efficiency siRNA Transfection Reagent	1.5 μ L	7.5 μ L	37.5 μ L							
	⑤ Incubation	Incubate at room temperature for 20-30 minutes.										
	⑥ After mixing the nucleic acid-Transfection Buffer complex with serum-free medium, add the mixture to the cells.	<table><tr><th>Components (per well)</th><th>96-well</th><th>24-well</th><th>6-well</th></tr><tr><td>O778393 Optimal-MEM Reduced Serum Medium (with Phenol Red)</td><td>90 μL</td><td>470 μL</td><td>1880 μL</td></tr></table>	Components (per well)	96-well	24-well	6-well	O778393 Optimal-MEM Reduced Serum Medium (with Phenol Red)	90 μ L	470 μ L	1880 μ L		
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Days 2-4	⑦ Visualize/Analyze Transfected Cells	After incubating the cells at 37°C for 4 hours, aspirate all the samples and replace with complete medium. Continue to incubate at 37°C for 2-4 days, then analyze the transfected cells.										

Note: The molar amount of 0.2 μ g siRNA is approximately 15 pmol, the molar amount of 1 μ g siRNA is approximately 75 pmol, and the molar amount of 5 μ g siRNA is approximately 376 pmol.

For in vivo transfection, optimize the transfection conditions according to the mouse body weight. The ratio of High-Efficiency siRNA Transfection Reagent (μ L) to mRNA (μ g) can be adjusted between 3:1 and 6:1. It is optimal to keep the tumor volume within 50 mm³–200 mm³.

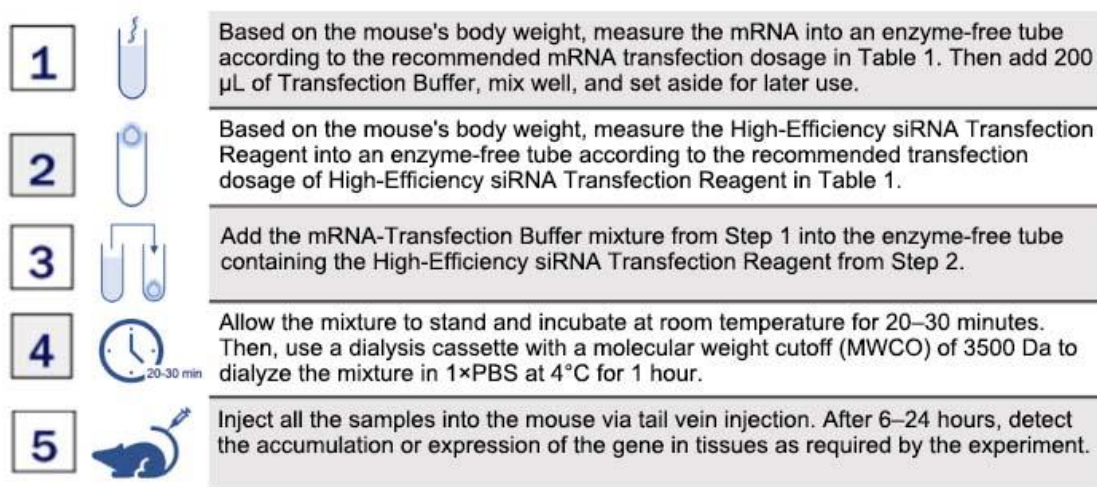


Figure 5. In vivo transfection workflow.

Table 1. Transfection Dosages for Mice of Different Body Weights

Mouse Weight	Recommended Tumor Volume	Dosage of High-Efficiency siRNA Transfection Reagent	Dosage of mRNA
15 g	100 mm ³	49 µL	12 µg
20 g	100 mm ³	65 µL	15 µg
25 g	100 mm ³	82 µL	19 µg
30 g	100 mm ³	98 µL	23 µg

Specifications

Item	Information
Synonyms	siRNA Transfection Reagent Transfection reagent for siRNA in vitro siRNA/miRNA Transfection Reagent siRNA/miRNA Small Nucleic Acid Transfection Reagent
Specifications & Purity	BioReagent, for cell culture, Suitable for molecular biology, sterile
Stability And Storage	Store at 2-8°C long term (12 months). Avoid freeze/thaw cycle.
Storage	Store at 2-8°C, Do not freeze
Shipped In	Wet ice, Do not freeze This product requires cold chain shipping. Ground and other economy services are not available.

Recommended Applications

Cell Transfection, Gene expression, In vivo transfection, Nucleic Acid Delivery

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