

LNP RNA Transfection Reagent (Stem Cells)

Cat. No.: S1374075 | Pack size: 50 μ L / 1.5 mL / 3.0 mL / 5.0 mL | Storage: 2-8 $^{\circ}$ C; do not freeze

Storage Temperature

Store at 2-8 $^{\circ}$ C. Do not freeze!

Overview

LNP RNA Transfection Reagent (Stem Cells) is a novel, ready-to-use transfection reagent developed using lipid nanoparticle (LNP) technology. It uses the unique transmembrane transport and endosomal escape mechanisms of LNPs to deliver RNA efficiently and is broadly suitable for the transfection of different RNA types into stem cells such as MSCs.

Easy to use: No specialized encapsulation equipment is required. A single mixing step enables instantaneous RNA-LNP encapsulation. No incubation is required, and transfection can be performed immediately. There is no need to replace the culture medium after transfection.

Efficient: Encapsulation efficiency can reach 80% or higher for small-volume samples, enabling efficient transfection of stem cells such as MSCs.

Safe: This product is ethanol-free, uses novel biodegradable lipid materials, has extremely low cytotoxicity, and is filtered through a 0.2 μ m microporous membrane.

Kit Contents & Storage

S1374075	Component	50 μ L	1.5 mL	3.0 mL	5.0 mL	Storage
S1374075A	Stem Cell RNA Transfection Reagent	50 μ L	1.5 mL	3.0 mL	5.0 mL	2-8 $^{\circ}$ C
S1374075B	Buffer	1 mL	8 mL	2 $\times$ 8 mL	3 $\times$ 8 mL	2-8 $^{\circ}$ C

Recommended Applications

LNP RNA Transfection Reagent (Stem Cells) is suitable for in vitro RNA transfection into stem cells such as MSCs. Compatible RNA types include siRNA, miRNA, gRNA, mRNA, saRNA, and circRNA. This product is for research use only.

Precautions

(1) Nuclease-free water is the preferred solvent for RNA stocks. The mRNA stock concentration must be at least 200 ng/μL, the short-chain RNA stock concentration must be at least 100 ng/μL, and the siRNA stock concentration must be at least 10 μM. Other solvents may affect transfection performance; please contact us for advice on specific conditions.

(2) When preparing the RNA premix, use only the Buffer supplied with the kit to dilute the RNA stock. Do not use PBS or culture medium.

(3) Ensure that the RNA premix concentration is 40 ng/μL. When co-transfecting multiple RNA species, such as CRISPR Cas9 mRNA and gRNA, the RNA premix concentration refers to the combined concentration of Cas9 mRNA + gRNA. The recommended ratio of Cas9 mRNA to gRNA is 1:1 to 1:2 (μg_{mRNA}:μg_{gRNA}).

(4) The RNA/LNP ratio is a critical factor in LNP encapsulation. To increase or decrease the RNA amount per well, follow the instructions below:

1. For mRNA transfection and mRNA + gRNA co-transfection, increase or decrease the volume of RNA-LNP complexes added per well in proportion to the desired change in mRNA amount.

2. For siRNA transfection, increase the volume of RNA-LNP complexes added per well in proportion to the desired increase in siRNA amount. To decrease the siRNA amount per well, do not reduce the LNP transfection reagent below Recommended Amount II. For a 96-well plate, when reducing the siRNA amount to 0.5 pmol per well, adjust only the siRNA premix concentration to 0.5 μM. The minimum transfection reagent amount is 0.5 μL per well; leave all other steps unchanged.

(5) RNA-LNP complexes are stable at room temperature for 8 h. Do not freeze RNA-LNP complexes.

(6) There is no need to replace the culture medium before or after transfection. Complete medium containing serum and dual antibiotics has no appreciable effect on transfection performance. From 6 h after transfection, medium changes and other procedures may be performed according to the routine cell culture protocol.

Appendix A: Instructions for RNA Transfection into Stem Cells

1. LNP Stem Cell RNA Transfection Kit Workflow (Recommended Amount I)

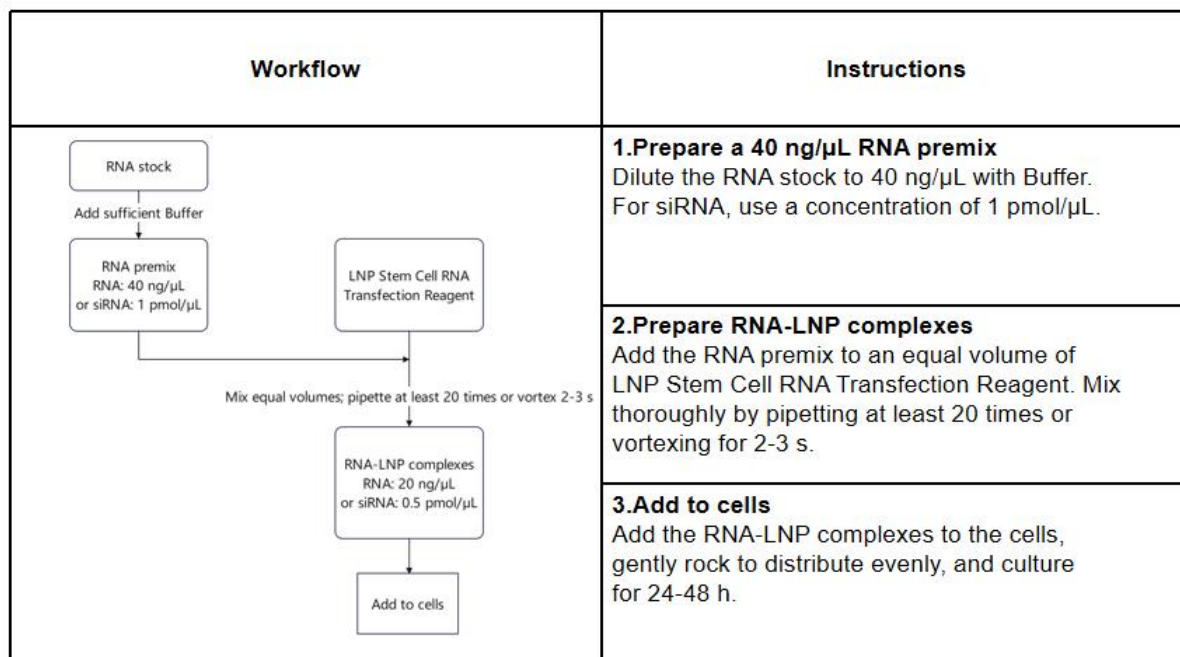


Figure 1. Stem cell RNA transfection workflow (Recommended Amount I).

2. Per-Well Reagent Amounts for Different Culture Vessels (Recommended Amount I)

RNA cell transfection step	Reagent	96-well plate	24-well plate	6-well plate
1) Prepare a 40 ng/μL RNA premix	Buffer (example: RNA stock at 1 μg/μL)	2.4 μL	12 μL	60 μL
	RNA	0.1 μg	0.5 μg	2.5 μg
2) Prepare RNA-LNP complexes	LNP Stem Cell RNA Transfection Reagent	2.5 μL	12.5 μL	62.5 μL
	RNA premix	2.5 μL	12.5 μL	62.5 μL
3) Add to cells	RNA-LNP complexes	5 μL	25 μL	125 μL

siRNA cell transfection step	Reagent	96-well plate	24-well plate	6-well plate
1) Prepare a 1 pmol/ μ L siRNA premix (i.e., 1 μ M)	Buffer (example: siRNA stock at 10 μ M)	0.9 μ L	4.5 μ L	22.5 μ L
	siRNA	1 pmol	5 pmol	25 pmol
2) Prepare siRNA-LNP complexes	LNP Stem Cell RNA Transfection Reagent	1 μ L	5 μ L	25 μ L
	siRNA premix	1 μ L	5 μ L	25 μ L
3) Add to cells	siRNA-LNP complexes	2 μ L	10 μ L	50 μ L

3. LNP Stem Cell RNA Transfection Kit Workflow (Recommended Amount II)

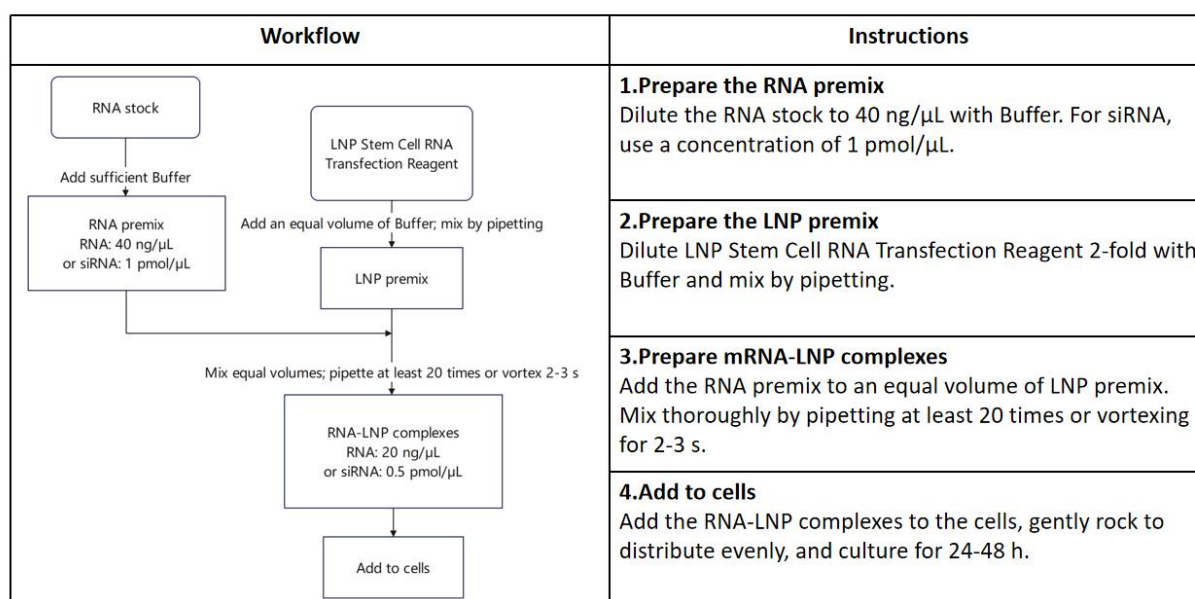


Figure 2. Stem cell RNA transfection workflow (Recommended Amount II).

4. Per-Well Reagent Amounts for Different Culture Vessels (Recommended Amount II)

RNA cell transfection step	Reagent	96-well plate	24-well plate	6-well plate
1) Prepare a 40 ng/μL RNA premix	Buffer (example: RNA stock at 1 μg/μL)	2.4 μL	12 μL	60 μL
	RNA	0.1 μg	0.5 μg	2.5 μg
2) Prepare the LNP premix	Buffer	1.25 μL	6.25 μL	31.25 μL
	LNP Stem Cell RNA Transfection Reagent	1.25 μL	6.25 μL	31.25 μL
3) Prepare RNA-LNP complexes	LNP premix	2.5 μL	12.5 μL	62.5 μL
	RNA premix	2.5 μL	12.5 μL	62.5 μL
4) Add to cells	RNA-LNP complexes	5 μL	25 μL	125 μL

siRNA cell transfection step	Reagent	96-well plate	24-well plate	6-well plate
1) Prepare a 3 pmol/μL siRNA premix (i.e., 1 μM)	Buffer (example: siRNA stock at 10 μM)	0.9 μL	4.5 μL	22.5 μL
	siRNA	1 pmol	5 pmol	25 pmol
2) Prepare the LNP premix	Buffer	0.5 μL	2.5 μL	12.5 μL
	LNP Stem Cell RNA Transfection Reagent	0.5 μL*	2.5 μL*	12.5 μL*
3) Prepare siRNA-LNP complexes	LNP premix	1 μL	5 μL	25 μL
	siRNA premix	1 μL	5 μL	25 μL
4) Add to cells	siRNA-LNP complexes	2 μL	10 μL	50 μL

* The recommended amount of LNP Common Cell RNA Transfection Reagent per well is the minimum amount for siRNA transfection.

Appendix B: Recommended Protocol for CRISPR/Cas9 mRNA + gRNA Co-Transfection

1. Cas9 mRNA + gRNA Co-Transfection Workflow

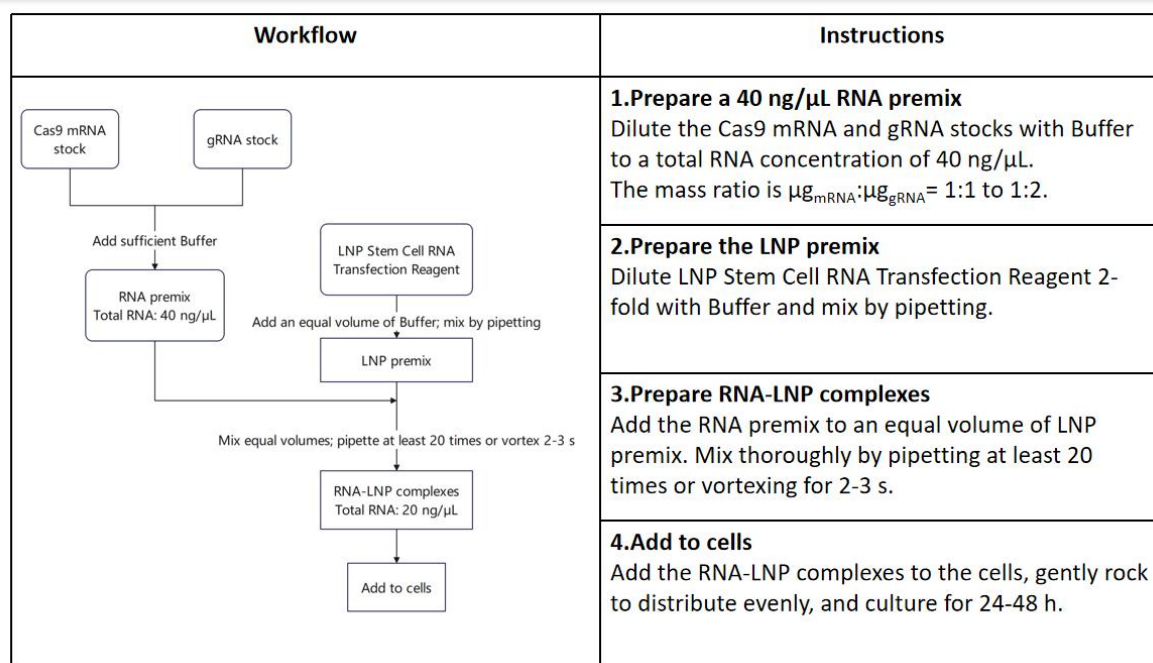


Figure 3. Cas9 mRNA + gRNA co-transfection workflow for stem cells.

2. Per-Well Reagent Amounts for Different Culture Vessels

Cas9 mRNA + gRNA cell transfection step	Reagent	96-well plate	24-well plate	6-well plate
1) Prepare a 40 ng/μL RNA premix	Buffer	4.8 μL	24 μL	120 μL
	Cas9 mRNA (example: mRNA stock at 1 μg/μL)	0.1 μg	0.5 μg	2.5 μg
	gRNA (example: gRNA stock at 1 μg/μL)	0.1 μg	0.5 μg	2.5 μg
2) Prepare the LNP premix	Buffer	2.5 μL	12.5 μL	62.5 μL
	LNP Stem Cell RNA Transfection Reagent	2.5 μL	12.5 μL	62.5 μL
3) Prepare RNA-LNP complexes	LNP premix	5 μL	25 μL	125 μL
	RNA premix	5 μL	25 μL	125 μL
4) Add to cells	RNA-LNP complexes	10 μL	50 μL	250 μL

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Whether you have a technical question, need help with a quotation, or want to inquire about an order, our regional teams are ready to assist. Please contact the office for your region; for general inquiries, the North American office is the corporate primary.

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