YEASEN

Hieff Trans™ Booster Transfection Reagent

Beyond Liposomes:
The Next Generation DNA/RNA Transfection Reagent

Customer Case Collections & Cell Transfection Operation Guide

Yeasen Biotechnology

COMPANY OVERVIEW

Since its establishment, Yeasen Biotechnology Co., Ltd. has been focusing on the innovative development and industrialized manufacturing of enzymes, antigens and antibodies. Based on several R&D centers and two commercial-scale manufactories in Shanghai, Wuhan and USA, we are committed to producing molecular biology enzymes and reagents, providing high-quality customized solutions to customers in the fields of basic biological research, diagnostic tests, biopharmaceuticals and vaccines. Relying on reliable warehousing logistics and fast manufacturing distribution, Yeasen provides more efficient services and competitive products. As the top brand of molecular enzyme in China, Yeasen has served more than 23,000 Clients & Labs, and is willing To enable success of our customers, Together to make a healthier and brighter world !

Cutting-Edge Technology

- Directed evolution and rational design of enzymes
- High Density fermentation
- High-affinity monoclonal antibody
- Molecular diagnostic platform
- NGS Library preparation platform
- mRNAtools manufacture facility

Company Size

- More than 10 years industry experience
- 700+ employees with PhD and masters accounted for 35%
- 40000m^2 area for R&D, Manufacture and Quality control
- 20,000+ Companies & Academic customers
- 47000 + Publication Impact Factor

Products Category

- High quality molecular enzymes
- Molecular IVD reagents
- NGS library preparation
- mRNA synthesis enzymes
- Life science reagents (molecular biology, cell biology, protein biology and immunology)

Honorary & Certification

- National High-tech Enterprise
- ISO 13485 Certification
- 18 authorized patents, including 14 invention patents
- 41 registered trademarks
- 45 software copyright

Hieff Trans™ Novel Transfection Reagent Development Platform

Leveraging an AI-powered and high-throughput screening platform for transfection reagent development, Yeasen Biotechnology has successfully launched a series of transfection reagents covering three major fields: basic scientific research, recombinant protein/antibody production, and viral vector manufacturing. This platform provides researchers with high-quality foundational transfection reagents; its high-performance products support large-scale antibody and protein production; and it also offers GMP-grade transfection reagents for viral packaging, meeting the demands of large-scale AAV and lentiviral (LV) vector production, thereby robustly supporting drug development and manufacturing applications.

AI-Driven Molecular Design Platform

Utilizing artificial intelligence (AI)-based molecular dynamics simulations and high-throughput virtual screening, this platform accurately predicts the structure-function relationships of transfection reagent molecules, rapidly identifying optimal modification sites.

By simulating interactions between transfection reagents and cell membranes, the platform optimizes the ratio of cationic density to hydrophobic groups, effectively reducing cytotoxicity while enhancing transfection efficiency.

Core R&D Strengths

Powered by High-Throughput Compound Library Screening

High-Throughput Biological Validation Platform

Integrated with automated cell culture and flow cytometry systems, this platform enables high-throughput evaluation of transfection efficiency and cytotoxicity, accelerating the translation of candidate molecules from lab-scale discovery to industrial production.

Tailored to specific application scenarios, the platform has successfully screened optimal transfection reagents from over ten thousand candidate compounds and completed three successful pilot production batches.

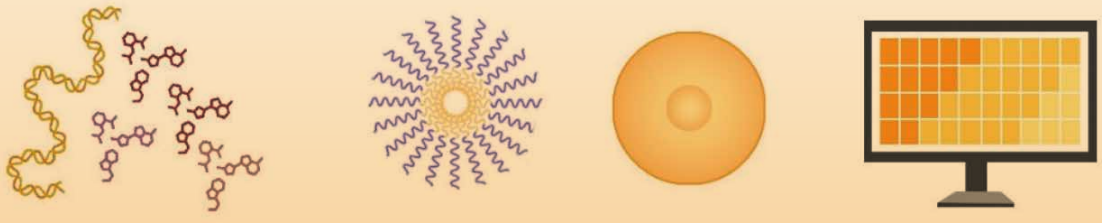

Figure 1. Screening of Modified Molecules for Hieff Trans™ Novel Transfection Reagents

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Hieff Trans™ Booster Transfection Reagent Product Overview

Overcoming the Primary Cell Transfection Barrier — Simpler, More Efficient Gene Delivery

Hieff Trans™ Booster Transfection Reagent is an upgraded nucleic acid transfection reagent developed with a novel polymer-based delivery system. Its unique molecular design significantly reduces cytotoxicity and features an intelligent enzyme-resistant mechanism that efficiently protects nucleic acids from intracellular degradation during delivery, maximizing transfection efficiency.

*Premium Options for Difficult-to-transfect Cell Lines: Sensitive and Primary Cells.
*Achieves high efficiency in 200+ various cell lines:293T, HeLa, MCF7, HepG2, BMDMNIH3T3,RAW264.7, and HCT116 and primary cells, with consistent and reproducible results.
*Compatible with various nucleic acid types—including DNA, siRNA, miRNA, mRNA, and ASO etc.

Hieff Trans™ Booster DNA/RNA Transfection Reagent	(40801ES)

Beyond Liposomes: The Next Generation Booster DNA/RNA Transfection Reagent

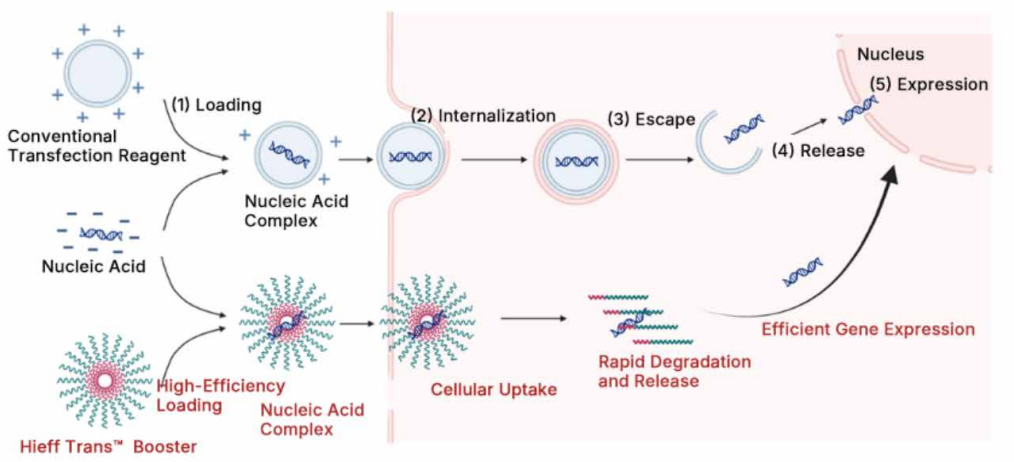


Figure 2. Comparison of the transfection mechanism between Hieff Trans™ Booster and conventional reagents

The mechanism of this product bypasses the conventional endosomal pathway (in which endosomes gradually evolve into lysosomes over time), thereby avoiding nucleic acid degradation by lysosomal enzymes and achieving more efficient gene delivery.

Features

Broad compatibility	Suitable for transfection of DNA, mRNA, siRNA, miRNA, and ASO.
High efficiency	Achieves superior transfection performance in hard-to-transfect and primary cells.
Low toxicity	Non-liposomal, non-PEI polymer material ensures minimal cytotoxicity.

Validated Cell Series									
293T	AC16	DF-1	HepG2	MACT	MC3T3-E1	SF9	T24	BMDMs	THP-1
HEK293	AGS	HCT-116	HGC-27	MC38	MACT	RAW264.7	AC16	CEF	JurKat
A549	MCF-7	Hela	NIH-3T3	MCF-7	Hacat	B16-F10	IPAM	PAECs	More...

Performance

High-Efficiency Transfection for Primary Cells

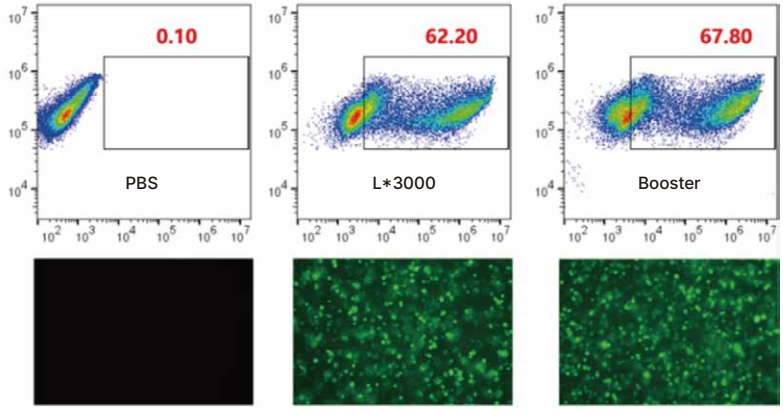


Figure 3. Plasmid DNA transfection in primary bone marrow-derived macrophages (BMDMs) using Booster DNA&RNA Transfection Reagent versus L*3000. The result demonstrates superior primary cell transfection efficiency of Booster.

High-Efficiency Transfection for Hard-to-Transfect Cells

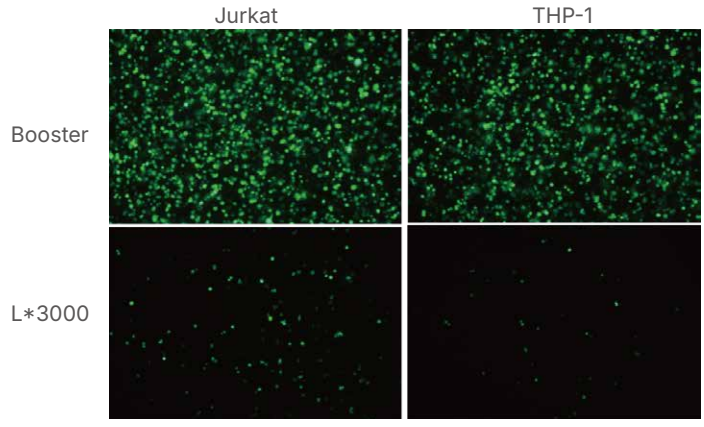


Figure 4. DNA transfection across different cells using Booster DNA&RNA Transfection Reagent versus L*3000. The result demonstrates superior DNA transfection efficiency of Booster.

High-Efficiency mRNA Transfection

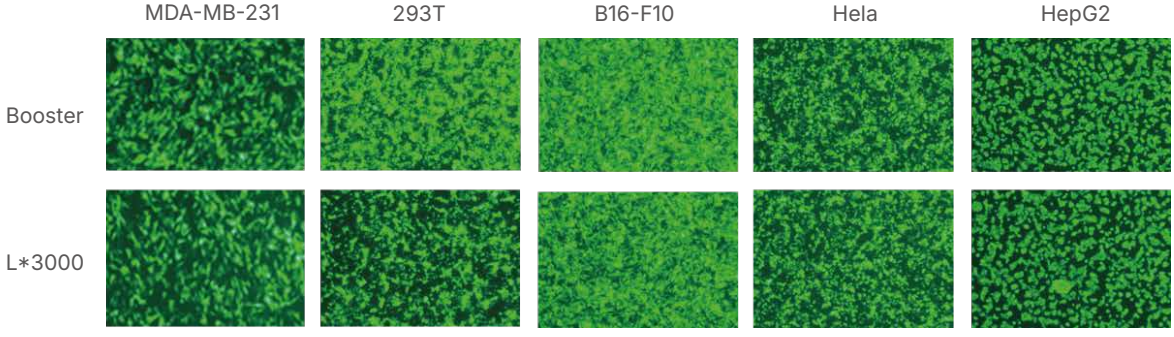


Figure 5. mRNA transfection across different cells using Booster DNA&RNA Transfection Reagent versus L*3000. The result demonstrates superior mRNA transfection efficiency of Booster.

High-Efficiency SiRNA Transfection

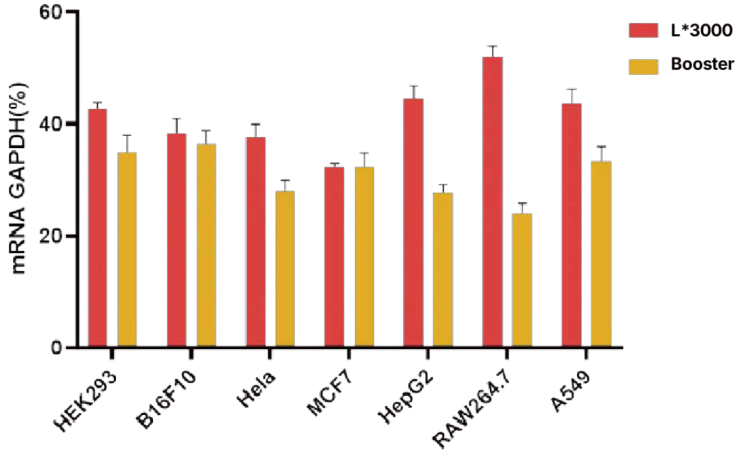


Figure 6. siRNA transfection across different cells using Booster DNA&RNA Transfection Reagent versus L*3000. The result demonstrates superior siRNA transfection efficiency of Booster.

Transfection Cases

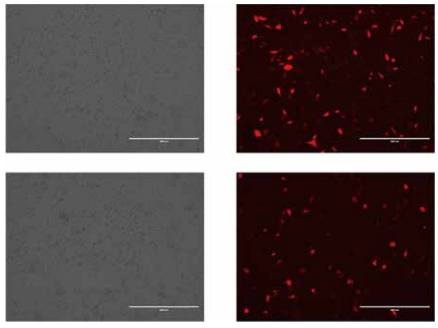
Cell Type	Case No.	Cell Name	Nucleic Acid Type
Primary & Neural Stem Cells	Case 1	PAMs (Primary Porcine Alveolar Macrophages)	Plasmid DNA
	Case 2	MPFs (Mouse Primary Fibroblasts)	Plasmid DNA
	Case 3	MPHs (Mouse Primary Hepatocytes)	Plasmid DNA
	Case 4	mNSCs (Mouse Primary Neural Stem Cells)	mRNA
	Case 5	PSFs (Primary Skin Fibroblasts)	Plasmid DNA
	Case 6	HPAECs (Primary Human Pulmonary Artery Endothelial Cells)	Plasmid DNA
	Case 7	BMDMs (Primary Bone Marrow–Derived Macrophages)	siRNA
	Case 8	CEFs (Primary Chicken Embryo Fibroblasts)	Plasmid DNA
Suspension Cells	Case 9	THP-1 (Human Monocytic Leukemia Cells)	Plasmid DNA
	Case 10	Jurkat (Human T-Lymphocyte Leukemia Cells)	Plasmid DNA
	Case 11	Sf9 (Insect Ovarian Cells)	Plasmid DNA
	Case 12	CHO-S (Chinese Hamster Ovary Suspension Cells)	Plasmid DNA
Tumor Cells	Case 13	A549 (Human Non-Small Cell Lung Carcinoma Cells)	Plasmid DNA
	Case 14	T24 (Human Bladder Transitional Cell Carcinoma Cells)	Plasmid DNA
	Case 15	HeLa (Human Cervical Cancer Cells)	Plasmid DNA
	Case 16	MC38 (Mouse Colon Cancer Cells)	Plasmid DNA
	Case 17	AGS (Human Gastric Adenocarcinoma Cells)	Plasmid DNA
	Case 18	HepG2 (Human Hepatocellular Carcinoma Cells)	Plasmid DNA
	Case 19	HCT-116 (Human Colon Cancer Cells)	siRNA
	Case 20	HGC-27 (Human Gastric Cancer Cells)	siRNA
Other Common Cell Types	Case 21	RAW264.7 (Mouse Monocyte/Macrophage Leukemia Cells)	Plasmid DNA
	Case 22	RAW264.7 (Mouse Monocyte/Macrophage Leukemia Cells)	siRNA
	Case 23	MC3T3-E1 (Mouse Embryonic Pre-Osteoblast Cells)	Plasmid DNA
	Case 24	MC3T3-E1 (Mouse Embryonic Pre-Osteoblast Cells)	siRNA
	Case 25	AC16 (Human Cardiomyocytes)	Plasmid DNA
	Case 26	HaCaT (Human Keratinocytes)	Plasmid DNA
	Case 27	DF-1 (Chicken Embryo Fibroblast Cells)	Plasmid DNA
	Case 28	Mandarin Fish Cells (MFCs)	DNA + mRNA
	Case 29	MACT (Bovine Mammary Epithelial Cells)	Plasmid DNA
	Case 30	HEK293 (Human Embryonic Kidney Cells, 15 kb Large Fragment)	Plasmid DNA
	Case 31	293T (Human Embryonic Kidney Cells)	mRNA
	Case 32	293T (Human Embryonic Kidney Cells, 11 kb Large Fragment)	Plasmid DNA

Primary & Neural Stem Cell Transfection Case

Case 1 PAMs (Primary Porcine Alveolar Macrophages)

Yeasen-Booster

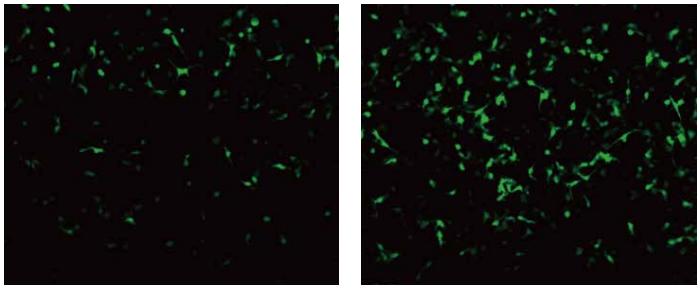
L* 3000



Cell Type	PAMs
Nucleic Acid Type	Plasmid DNA(8000 bp)
Culture Plate Size	6-well plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	5 μL

Figure 7. Transfection of plasmid DNA into primary porcine alveolar macrophages using Booster DNA&RNA Transfection Reagent versus L*3000. The result demonstrates superior DNA transfection efficiency of Booster.

Case 2 MPFs (Mouse Primary Fibroblasts)

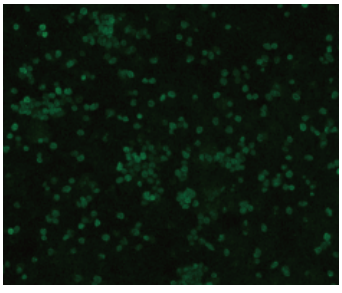


A*8000 Yeasen-Booster

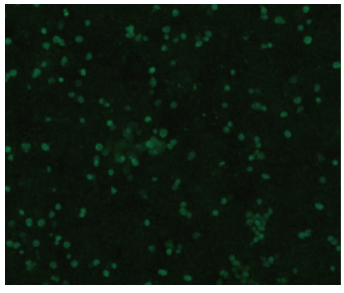
Cell Type	MPFs
Nucleic Acid Type	Plasmid DNA(6162 bp)
Culture Plate Size	12-well plate
Nucleic Acid Amount	1 μg
Transfection Reagent Volume	2 μL

Figure 8. Transfection of plasmid DNA into mouse primary fibroblasts using Booster DNA&RNA Transfection Reagent versus A*8000. The result demonstrates superior DNA transfection efficiency of Booster.

Case 3 MPHs (Mouse Primary Hepatocytes)



Yeasen-Booster



L*3000

Cell Type	MPHs
Nucleic Acid Type	Plasmid DNA(9500bp)
Culture Plate Size	3.5 cm dish
Nucleic Acid Amount	0.5 μg
Transfection Reagent Volume	1 μL

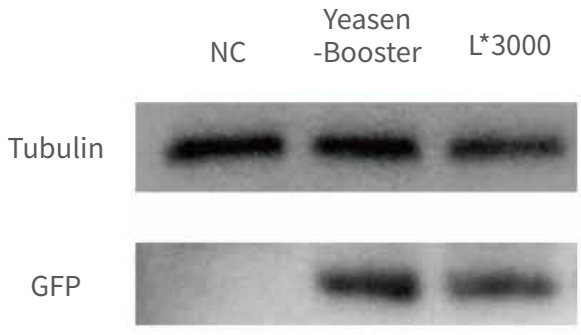
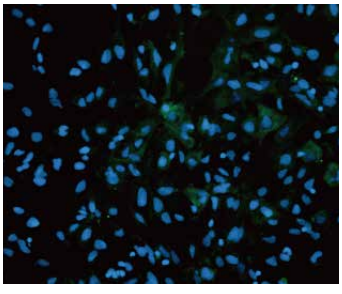
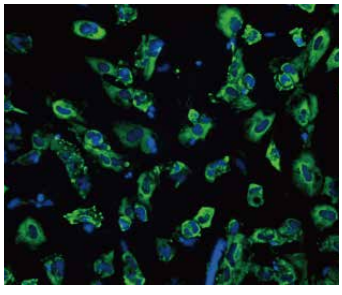


Figure 9. Transfection of plasmid DNA into Mouse liver primary cells using Booster DNA&RNA Transfection Reagent versus L*3000. The results(fluorescence microscopy and WB) demonstrates superior DNA transfection efficiency of Booster.

Case 4 mNSCs (Mouse Primary Neural Stem Cells)



B* 8008



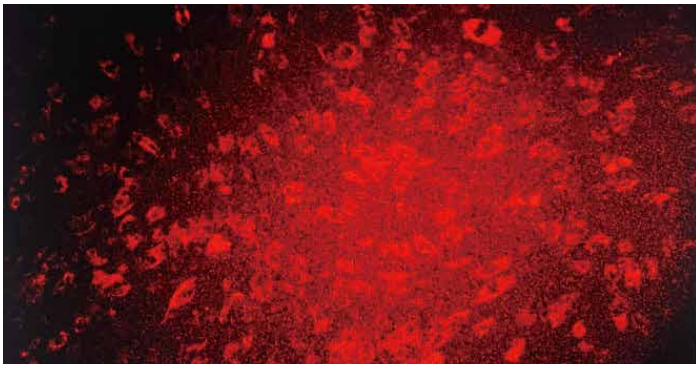
Yeasen-Booster

Cell Type	mNSCs
Nucleic Acid Type	mRNA
Culture Plate Size	96-well plate
Nucleic Acid Amount	20 ng
Transfection Reagent Volume	0.1 μL

Figure 10. Transfection of mRNA into Mouse primary neural stem cells using Booster DNA&RNA Transfection Reagent versus B*8008. The results showed that the transfection efficiency of Yeasen Booster transfection reagent was close to 100%.

Primary & Neural Stem Cell Transfection Case

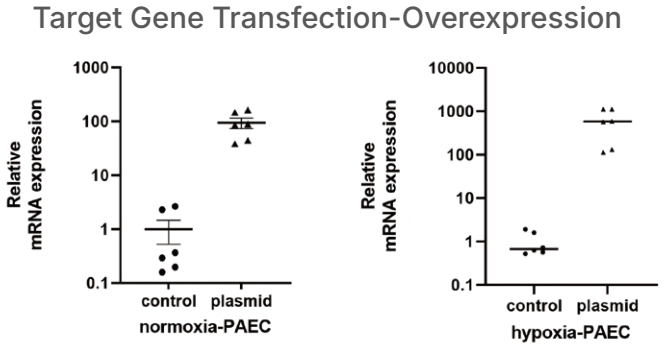
Case 5 PSFs (Primary Skin Fibroblasts)



Cell Type	PSFs
Nucleic Acid Type	Plasmid DNA(2112 bp)
Culture Plate Size	6-well plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	5 μL

Figure 11. Transfection of plasmid DNA into Primary skin fibroblasts using Booster DNA&RNA Transfection Reagent. The result showed that Yeasen Booster transfection reagent can efficiently transfect.

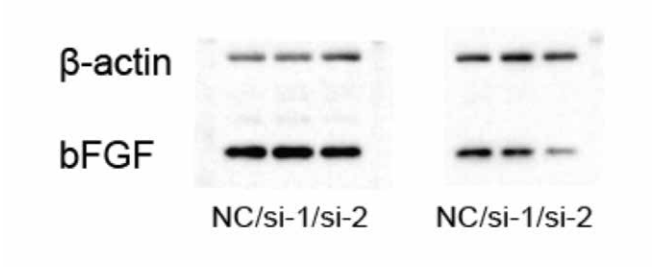
Case 6 HPAECs (Primary Human Pulmonary Artery Endothelial Cells)



Cell Type	HPAECs
Nucleic Acid Type	Plasmid DNA(967 bp)
Culture Plate Size	14-well plate
Nucleic Acid Amount	1 ug
Transfection Reagent Volume	2.5 μL

Figure 12. Transfection of plasmid DNA into Primary human pulmonary artery endothelial cells under hypoxic and normal conditions using Booster DNA&RNA Transfection Reagent. The result showed that Yeasen Booster transfection reagent can efficiently transfect.

Case 7 BMDMs (Primary Bone Marrow–Derived Macrophages)

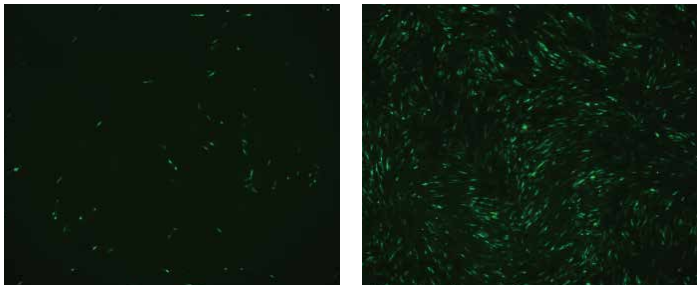


L*3000 Yeasen-Booster

Cell Type	BMDMs
Nucleic Acid Type	siRNA
Culture Plate Size	6-well-plate
Nucleic Acid Amount	50 nM
Transfection Reagent Volume	5 μL

Figure 13. siRNA transfection in primary bone marrow–derived macrophages using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. Western blot results show that Yeasen Booster achieves more efficient gene knockdown.

Case 8 CEFs (Primary Chicken Embryo Fibroblasts)



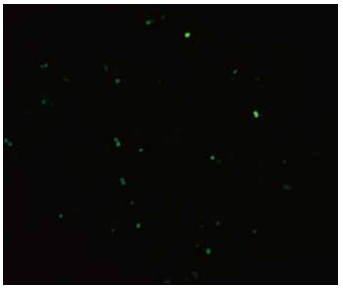
L*3000 Yeasen-Booster

Cell Type	CEFs
Nucleic Acid Type	Plasmid DNA(4700bp)
Culture Plate Size	24-well-palte
Nucleic Acid Amount	0.5 μg
Transfection Reagent Volume	1 μL

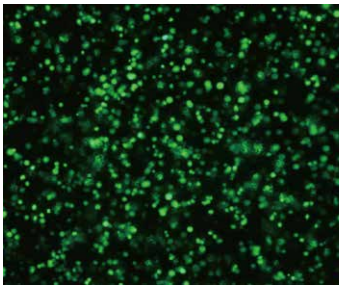
Figure 14. Plasmid DNA transfection in primary chicken embryo fibroblasts using Booster DNA&RNA Transfection Reagent versus L*3000 transfection reagent. The results demonstrate superior transfection performance of Booster.

Suspension Cell Transfection Case

Case 9 THP-1 (human monocytic leukemia cells)



L*3000

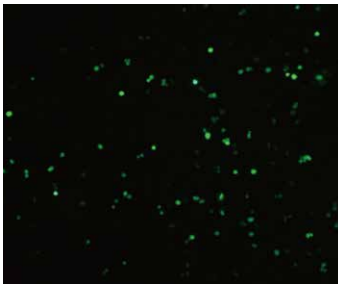


Yeasen-Booster

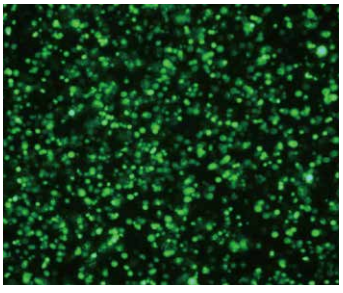
Cell Type	THP-1
Nucleic Acid Type	Plasmid DNA(6000 bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	5 μL

Figure 15. Plasmid DNA transfection in THP-1 using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior cell transfection efficiency of Booster.

Case 10 Jurkat (human T lymphocyte leukemia cells)



L*3000

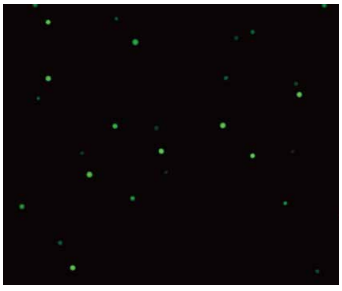


Yeasen-Booster

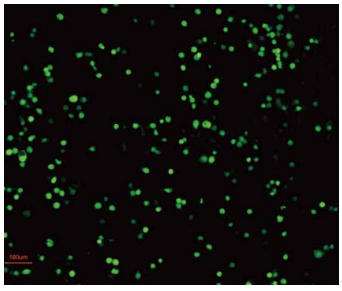
Cell Type	Jurkat
Nucleic Acid Type	Plasmid DNA（6000bp）
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	5 μL

Figure 16. Plasmid DNA transfection in Jurkat using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior cell transfection efficiency of Booster.

Case 11 Sf9 (insect ovary cells)



L*2000

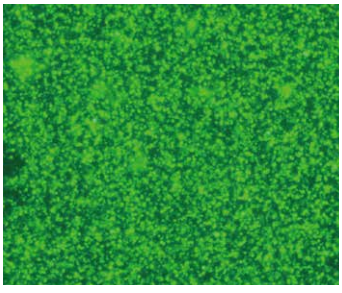


Yeasen-Booster

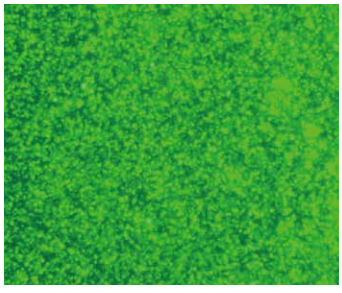
Cell Type	Sf9
Nucleic Acid Type	Plsmid DNA(6738bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	5 μL

Figure 17. Plasmid DNA transfection in sf9 using Booster DNA&RNA Transfection Reagent versus L* 2000 transfection reagent. The result demonstrates superior cell transfection efficiency of Booster.

Case 12 CHO-S (Chinese hamster ovary cells)



L*3000



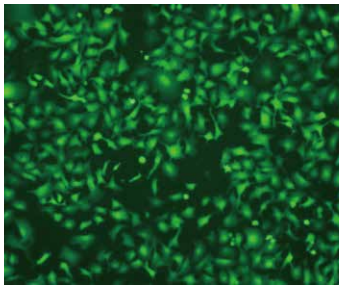
Yeasen-Booster

Cell Type	CHO-S
Nucleic Acid Type	Plasmid DNA(6000bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	5 μL

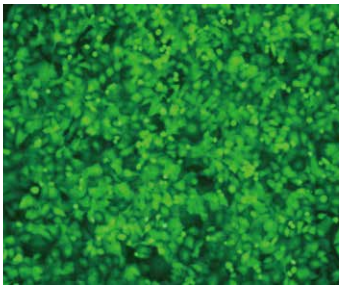
Figure 18. Plasmid DNA transfection in CHO-S using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior cell transfection efficiency of Booster.

Tumor Cell Transfection Case

Case 13 A549 (human non-small cell lung cancer cells)



L*3000

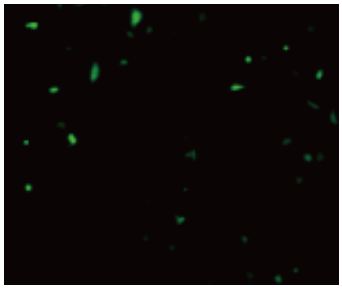


Yeasen-Booster

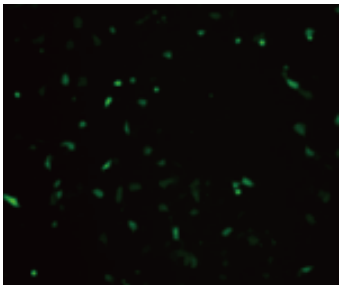
Cell Type	A549
Nucleic Acid Type	Plasmid DNA(6000bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	5 μL

Figure 19. Plasmid DNA transfection in A549 using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior cell transfection efficiency of Booster.

Case 14 T24 (human bladder transitional cell carcinoma cells)



L*3000

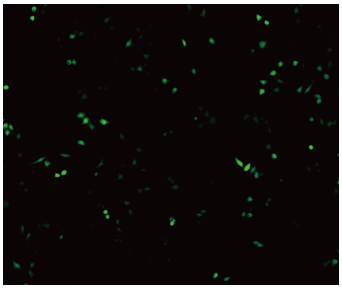


Yeasen-Booster

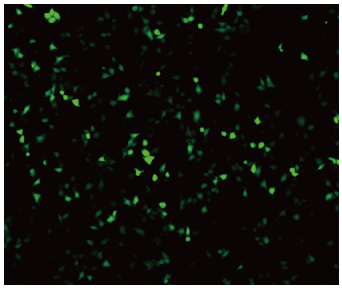
Cell Type	T24
Nucleic Acid Type	Plasmid DNA(9028bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	5 μL

Figure 20. Plasmid DNA transfection in T24 using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior cell transfection efficiency of Booster.

Case 15 HeLa (human cervical cancer cells)



L*3000

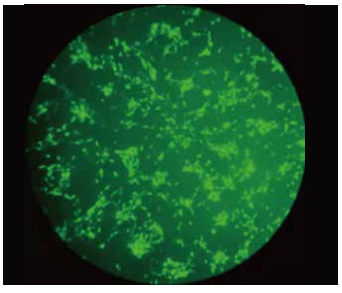


Yeasen-Booster

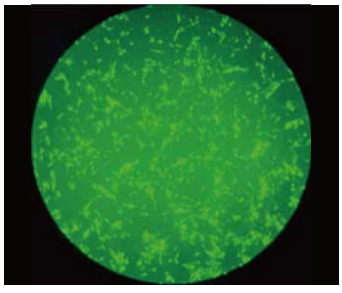
Cell Type	Hela
Nucleic Acid Type	Plasmid DNA(9500 bp)
Culture Plate Size	24-well-plate
Nucleic Acid Amount	0.5 μg
Transfection Reagent Volume	1 μL

Figure 21. Plasmid DNA transfection in Hela using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior cell transfection efficiency of Booster.

Case 16 MC38 (mouse colon cancer cells)



L*3000



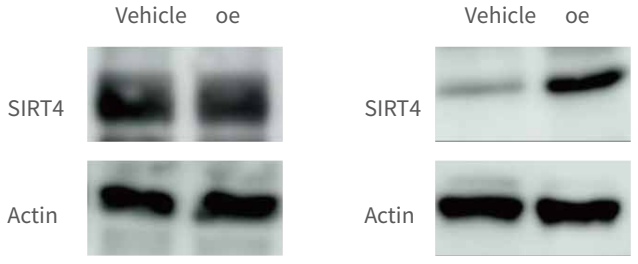
Yeasen-Booster

Cell Type	MC38
Nucleic Acid Type	Plasmid DNA(700bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	5 μg
Transfection Reagent Volume	10 μL

Figure 22. Plasmid DNA transfection in Mc38 using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior cell transfection efficiency of Booster.

Tumor Cell Transfection Case

Case 17 AGS (human gastric adenocarcinoma cells)

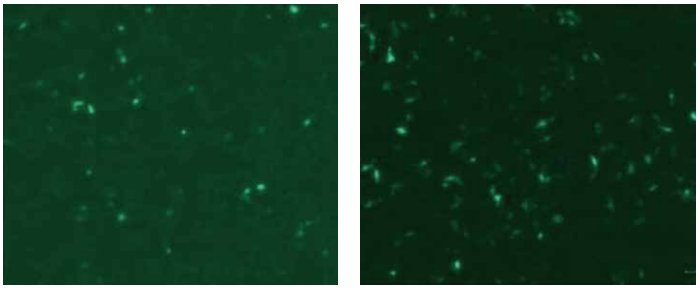


L*2000 Yeasen-Booster

Cell Type	AGS
Nucleic Acid Type	Plasmid DNA(2000bp)
Culture Plate Size	10 cm dish
Nucleic Acid Amount	7.5 μg
Transfection Reagent Volume	15 μL

Figure 23. Plasmid DNA transfection in AGS using Booster DNA&RNA Transfection Reagent versus L* 2000 transfection reagent. The result shows that the L* 2000 reagent exhibits no visible difference between pre- and post-transfection (endogenous expression, bands shown with enhanced exposure), whereas Booster achieves a clear overexpression effect.

Case 18 HepG2 (human hepatocellular carcinoma cells)

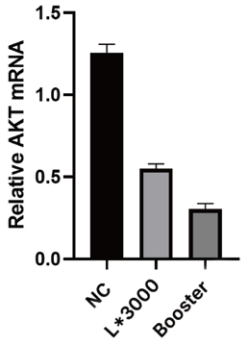


L*3000 Yeasen-Booster

Cell Type	HepG2
Nucleic Acid Type	Plasmid DNA(6000bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	5 μL

Figure 24. Plasmid DNA transfection in HepG2 using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior cell transfection efficiency of Booster.

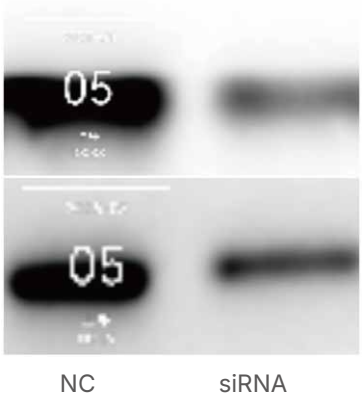
Case 19 HCT-116 (human colon cancer cells)



Cell Type	HCT-116
Nucleic Acid Type	siRNA
Culture Plate Size	T25
Nucleic Acid Amount	50 nM
Transfection Reagent Volume	10 μL

Figure 25. siRNA transfection in HCT116 cells using Booster DNA&RNA Transfection Reagent versus L*3000. The result demonstrates that Booster achieves a stronger gene knockdown effect.

Case 20 HGC-27 (human gastric cancer cells)

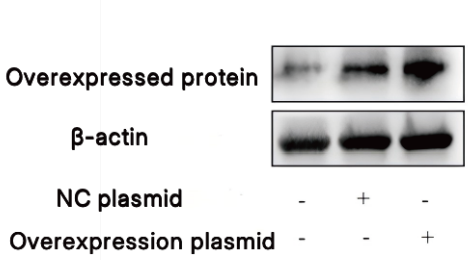


Cell Type	HGC-27
Nucleic Acid Type	siRNA
Culture Plate Size	T12
Nucleic Acid Amount	50 nM
Transfection Reagent Volume	10 μL

Figure 26. siRNA transfection in HGC-27 cells using Booster DNA&RNA Transfection Reagent versus L*3000. The result demonstrates that Booster achieves a stronger gene knockdown effect.

Other Common Cell Transfection Case

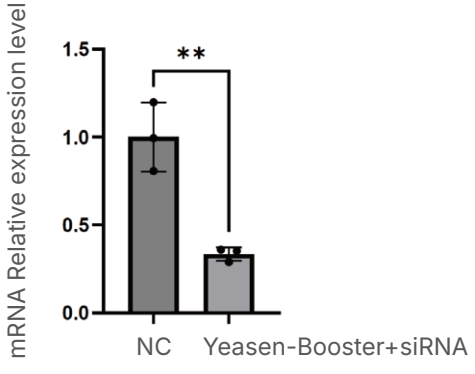
Case 21 RAW264.7 (mouse monocyte macrophage leukemia cells)



Cell Type	RAW264.7
Nucleic Acid Type	Plasmid DNA(7000 bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	5 μL

Figure 27. Plasmid DNA transfection in RAW264.7 cells using Booster DNA&RNA Transfection Reagent. Western blot analysis shows significant overexpression of the target gene after transfection with Booster.

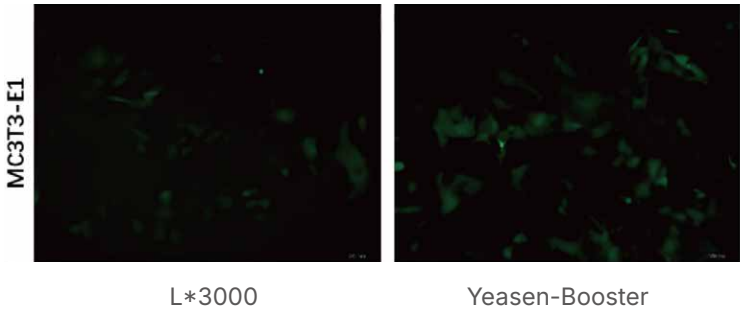
Case 22 RAW264.7 (mouse monocyte macrophage leukemia cells)



Cell Type	RAW264.7
Nucleic Acid Type	siRNA
Culture Plate Size	6-well-plate
Nucleic Acid Amount	50 nM
Transfection Reagent Volume	5 μL

Figure 28. siRNA transfection in RAW264.7 cells using Booster DNA&RNA Transfection Reagent. The result demonstrates that Booster achieves a stronger gene knockdown effect.

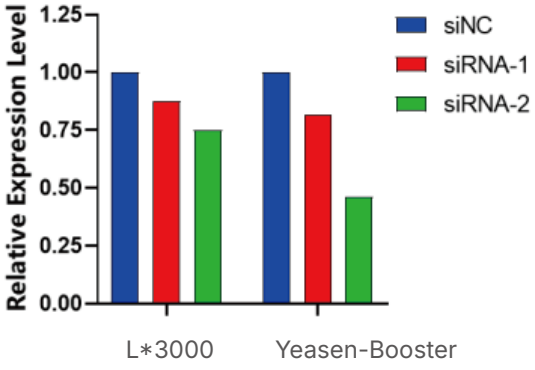
Case 23 MC3T3-E1 (mouse embryonic osteoblast precursor cells)



Cell Type	MC3T3-E1
Nucleic Acid Type	Plasmid DNA(5494bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	3.75 μL

Figure 29. Plasmid DNA transfection in MC3T3-E1 cells using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior transfection efficiency of Booster.

Case 24 MC3T3-E1 (mouse embryonic osteoblast precursor cells)

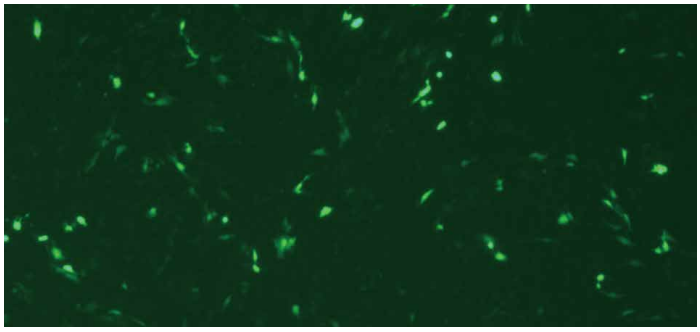


Cell Type	MC3T3-E1
Nucleic Acid Type	siRNA
Culture Plate Size	6-well-plate
Nucleic Acid Amount	50 nM
Transfection Reagent Volume	5 μL

Figure 30. siRNA transfection in MC3T3-E1 cells using Booster DNA&RNA Transfection Reagent versus L*3000. The result demonstrates that Booster achieves a stronger gene knockdown effect.

Other Common Cell Transfection Case

Case 25 AC16 (human cardiomyocytes)

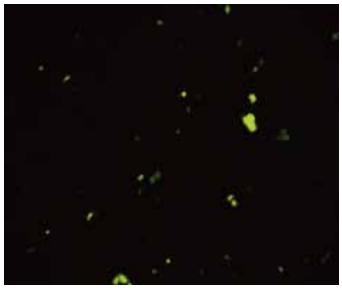


Yeasen-Booster

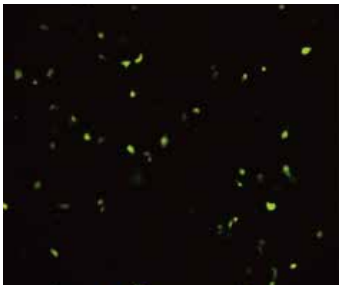
Cell Type	AC16
Nucleic Acid Type	Plasmid DNA(1563bp)
Culture Plate Size	12-well-plate
Nucleic Acid Amount	1 μg
Transfection Reagent Volume	2 μL

Figure 31. Plasmid DNA transfection in AC16 cells using Booster DNA&RNA Transfection Reagent. The result demonstrates superior transfection efficiency of Booster.

Case 26 HaCaT (human keratinocytes)



L*3000

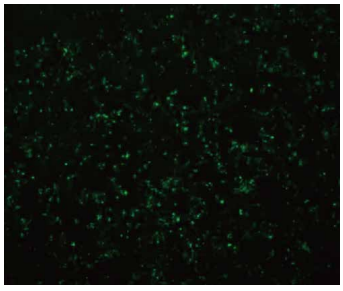


Yeasen-Booster

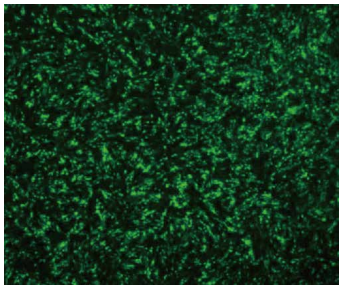
Cell Type	Hacat
Nucleic Acid Type	Plasmid DNA(1500bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2 μg
Transfection Reagent Volume	4 μL

Figure 32. Plasmid DNA transfection in HaCaT cells using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior transfection efficiency of Booster.

Case 27 DF-1 (chicken embryo fibroblasts)



L*3000

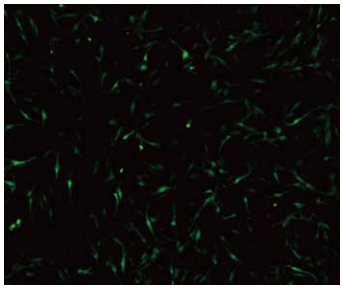


Yeasen-Booster

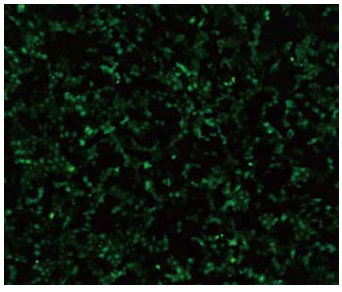
Cell Type	DF-1
Nucleic Acid Type	Plasmid DNA(4700bp)
Culture Plate Size	24-well-plate
Nucleic Acid Amount	1 μg
Transfection Reagent Volume	1 μL

Figure 33. Plasmid DNA transfection in DF-1 cells using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior transfection efficiency of Booster.

Case 28 Mandarin Fish Cells (MFCs)



L*3000



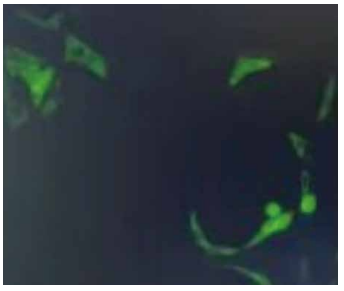
Yeasen-Booster

Cell Type	MFCs
Nucleic Acid Type	Co-transfection of plasmid DNA and mRNA
Culture Plate Size	6-well-plate
Nucleic Acid Amount	Co-transfection of plasmid DNA and mRNA
Transfection Reagent Volume	3 μL transfection reagent + 2 μL transfection reagent

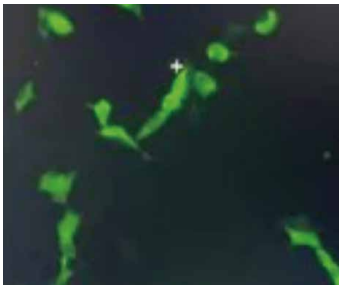
Figure 34. Co-transfection of plasmid DNA and mRNA in MFCs cells using Booster DNA&RNA Transfection Reagent versus L* 3000 transfection reagent. The result demonstrates superior transfection efficiency of Booster.

Other Common Cell Transfection Case

Case 29 MACT (bovine mammary epithelial cells)



L*3000

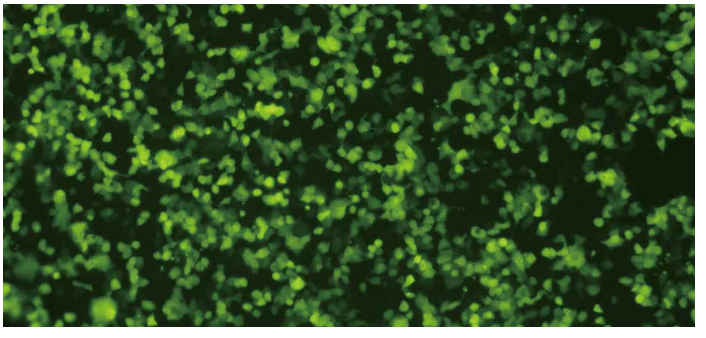


Yeasen-Booster

Cell Type	MACT
Nucleic Acid Type	Plasmid DNA(7500bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	7.5 μL

Figure 35. Plasmid DNA transfection in MACT cells using Booster DNA&RNA Transfection Reagent versus L*3000. The result demonstrates superior DNA transfection efficiency of Booster.

Case 30 HEK293 (human embryonic kidney cells)



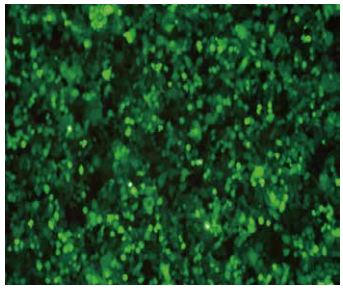
Booster

Cell Type	HEK293
Nucleic Acid Type	Plasmid DNA(15000bp)
Culture Plate Size	12-well-plate
Nucleic Acid Amount	1 μg
Transfection Reagent Volume	2 μL

Figure 36. 15 Kb large fragment plasmid DNA transfection in HEK293 cells using Booster DNA&RNA Transfection Reagent. The results showed that Yeasen Booster transfection reagent had a significant overexpression effect.

Case 31 293T (human embryonic kidney cells)

NC

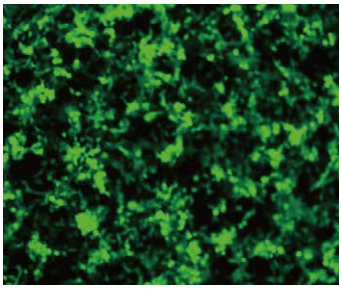


Yeasen-Booster

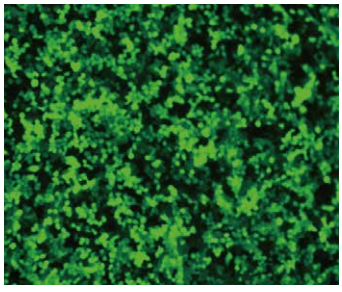
Cell Type	293T
Nucleic Acid Type	mRNA
Culture Plate Size	6-well-plate
Nucleic Acid Amount	2.5 μg
Transfection Reagent Volume	2 μL

Figure 37. mRNA transfection in 293T cells using Booster DNA&RNA Transfection Reagent. The results showed that Yeasen Booster transfection reagent had a significant overexpression effect.

Case 23 293T (human embryonic kidney cells)



L*3000



Yeasen-Booster

Cell Type	293T
Nucleic Acid Type	Plasmid DNA(11000bp)
Culture Plate Size	6-well-plate
Nucleic Acid Amount	5 μg
Transfection Reagent Volume	7.5 μL

Figure 38. 11 Kb large fragment plasmid DNA transfection in 293T cells using Booster DNA&RNA Transfection Reagent versus L*3000. The result demonstrates superior DNA transfection efficiency of Booster.

Transfection Protocol for Suspension Cells (Using THP-1 Cells as an Example)

I. Pre-Transfection Preparation

Cell Status	• THP-1 cells should be within 10 passages after thawing, with viability ≥90% on the day of transfection. • Culture Medium: RPMI-1640 supplemented with 10% FBS and 1% Penicillin/Streptomycin (P/S).
Plasmid DNA	• High purity (OD260/280 ratio ≈ 1.8–1.9, free of protein/phenol contamination), concentration ≥1000 ng/μL.
Reagents and Materials	• Hieff Trans™ Booster DNA/RNA Transfection Reagent • Opti-MEM Reduced-Serum Medium • 6-well plates (or 24-well plates, scale proportionally)

II. Cell Preparation (Day of Transfection)

Cell Counting Harvest THP-1 cells in log phase growth, centrifuge at 300 g for 5 min, discard supernatant, and resuspend in fresh complete medium.

Seeding

- 6-well plate: Seed 0.8–1.0 × 10^6 cells per well in a final volume of 2 mL.
- 24-well plate: Seed 0.1–0.2 × 10^6 cells per well in a final volume of 0.5 mL.

III. Preparation of Booster Transfection Reagent -DNA Complexes (for one well of a 6-well plate; scale linearly for other formats)

Dilute Transfection Reagent

- Mix 5 μL of Booster Transfection Reagent with 125 μL of Opti-MEM. Gently mix.

Dilute DNA

- Mix 2.5 μg of plasmid DNA and 5 μL of Enhancer with 125 μL of Opti-MEM. Gently mix.

Combine

- Add the diluted DNA mixture directly into the diluted transfection reagent. Mix gently and incubate at room temperature for 10–15 minutes to form complexes.

IV. Transfection

- Add 250 μL of the complex dropwise to the cell suspension while gently shaking the plate to ensure mixing.
- Incubate cells at 37°C, 5% CO_2.
- Transfection can be performed in serum-containing medium; medium change is not required.
- If cytotoxicity is a concern, replace the medium 6–8 hours post-transfection.

V. Post-Transfection Processing

Gene Expression Analysis:

- Perform qPCR, Western blot, or fluorescence reporter assays 48 hours post-transfection.

Stable Transfection (Optional):

- Begin selection 48 hours post-transfection by adding the appropriate antibiotic (e.g., Puromycin at 1–2 μg/mL). Change medium and reapply selection pressure every 7–10 days.

Transfection Protocol for Adherent Cells (Using RAW264.7 Cells as an Example)

I. Preparation (Day Before Transfection)

Cell Status	• Cells should be within 10 passages after thawing, with 70–90% confluence and no signs of differentiation (e.g., rounded morphology, few pseudopodia) on the day of transfection. • Culture Medium: DMEM (high glucose) supplemented with 10% FBS and 1% Penicillin/Streptomycin (P/S).
Plasmid DNA	• High purity, endotoxin-free, concentration ≥1000 ng/μL.
Reagents and Materials	• Hieff Trans™ Booster DNA/RNA Transfection Reagent • Opti-MEM™ Reduced-Serum Medium • 6-well plates (or 24-well plates, scale proportionally)

II. Transfection Procedure (Day of Transfection)

The following protocol is for 6-well plate; refer to the "Quick Reference Table" at the end for 24-well or 96-well plates.

Cell Seeding (18–24 hours prior)	• Seed 5–8 × 10^5 cells per well in 2 mL of complete medium and incubate overnight to reach 70–90% confluence. • 1–2 hours before transfection, replace the medium with 1.75 mL of complete medium without antibiotics (serum can be present).

III. Preparation of Booster-DNA Complexes

Tube A (Booster)	Mix 7.5 μL of Booster Transfection Reagent with 125 μL of Opti-MEM. Gently vortex or flick to mix.
Tube B (DNA)	Mix 2.5 μg of plasmid DNA and 7.5 μL of Transfection Enhancer (2 μL per μg DNA) with 125 μL of Opti-MEM. Gently vortex or flick to mix.
Combine	Add the diluted DNA mixture (Tube B) directly into the diluted transfection reagent (Tube A). Mix gently and incubate at room temperature for 10–15 minutes to form complexes.

IV. Transfection

• Add 250 μL of the complex dropwise into the well, distributing evenly. Gently rock the plate back and forth and side to side to mix.
• Incubate cells at 37°C, 5% CO_2.
• If cells appear unhealthy, replace the medium with fresh complete medium 6–8 hours post-transfection. If cells are healthy, medium change is optional.

V. Incubation and Detection

• Analyze transient expression by fluorescence microscopy or flow cytometry 24–48 hours post-transfection.
• For stable transfection, begin selection 24 hours post-transfection by adding puromycin (1–2 μg/mL). Change medium and reapply selection pressure every 7–10 days.

Note: RAW264.7 cells adhere loosely. When changing medium, aspirate slowly along the side of the well to avoid dislodging cells.

Main Methods to Improve Transfection Efficiency

1.Ensure high cell viability and use high-quality plasmid DNA (concentration ≥1000 ng/μL, endotoxin-free).

2.Dilute plasmid DNA and transfection reagent in Opti-MEM, which helps improve transfection efficiency.

3.If significant cell death occurs after transfection, replace the medium 6 hours post-transfection.

4.If cell health is good, consider doubling the amount of transfection reagent and enhancer. For example, in a 6-well plate, use 2.5 μg plasmid DNA with 10 μL enhancer and 10 μL transfection reagent (Alternatively, use 2.5 μg plasmid DNA with 7.5 μL enhancer and 7.5 μL transfection reagent).

5.Serum starvation: Replace the medium with serum-free medium 6 hours before transfection. Perform transfection according to the standard protocol, then replace with complete medium containing serum 6 hours after transfection.

Reagent Volume Conversion Table for Different Culture Vessel Formats

Culture Vessel	Medium Volume		DNA Transfection			siRNA Transfection (Final Concentration: 20 μM)	
	Culture Medium Volume	Total Volume of Opti-MEM in Complex	DNA (μg)	Booster Transfection Reagent (μL)	Enhancer (μL)	siRNA Volume (Initial Concentration: 20 μM)	Booster Transfection Reagent (μL)
96-well plate	100 μL	2 × 5 μL	0.1	0.2	0.2	0.25 μL	0.3
48-well plate	250 μL	2 × 12.5 μL	0.25	0.5	0.5	0.625 μL	0.75
24-well plate	500 μL	2 × 25 μL	0.5	1	1	1.25 μL	1.5
12-well plate	1 mL	2 × 50 μL	1	2	2	2.5 μL	3
6-well plate	2 mL	2 × 125 μL	2.5	5	5	5 μL	7.5
60 mm dish	5 mL	2 × 250 μL	5–10	10–20	10–20	12.5 μL	20
10 cm dish	10 mL	2 × 500 μL	15–25	30–50	30–50	25 μL	40
T25 flask	6 mL	2 × 250 μL	6–12	12–24	12–24	15 μL	24
T75 flask	15 mL	2 × 750 μL	20–40	40–80	40–80	37.5 μL	60

Transfection Reagent Selection Guide

Cat. No.	40801ES	40802ES	40806ES	40809ES	40820ES	40823ES	40824ES
Product Name	Booster Transfection Reagent	Liposomal Transfection Reagent	siRNA/miRNA Transfection Reagent	mRNA Transfection Reagent	PEI Virus Packaging Reagent	UltraAAV Virus Packaging Reagent	UltraAAV-GMP Virus Packaging Reagent
Cell Type	Common cells Hard-to-transfect cell Primary cells Stem cells	Common cells	Common cells Hard-to-transfect cell Primary cells Stem cells	Common cells Hard-to-transfect cell Primary cells Stem cells	Common cells	Common cells	Common cells
Nucleic Acid Type	DNA	DNA			DNA	DNA	DNA
	siRNA		siRNA				
	miRNA		miRNA				
	ASO		ASO				
	mRNA			mRNA			
Application	DNA and mRNA/siRNA/miRNA, primary cell, neurons, and hard-to-transfect cells transfection	General DNA transfection in multiple cell lines	Efficient siRNA/miRNA transfection	Specialized for high-efficiency mRNA transfection.	Large-scale LV & AAV virus production, research-grade	Large-scale AAV virus production, research-grade (suspension)	Large-scale AAV virus production, GMP-grade (suspension)

Ordering Information

Category	Cat. No.	Name	Size
Basic Research	40801ES	Hieff Trans™ Booster DNA/RNA Transfection Reagent	100 μL/1.5 mL
	40802ES	Hieff Trans™ Liposomal Transfection Reagent (Ver.2000)	100 μL/1 mL
	40804ES	Hieff Trans™ Polybrene(hexadimethrine bromide)(10 mg/mL)	500 μL/5×500 μL
	40806ES	Hieff Trans™ in vitro siRNA/miRNA Transfection Reagent	100 μL/1 mL
	40809ES	Hieff Trans™ mRNA Transfection Reagent	100 μL/1 mL
	40815ES	Hieff Trans™ Polyethylenimine Linear(PEI) MW25000	1 g/5×1 g
	40816ES	Hieff Trans™ Polyethylenimine Linear (PEI) MW40000(rapid lysis)	100 mg/1 g
	40818ES	Hieff Trans™ 293 Transfection Reagent	100 μL/1 mL/10 mL
Viral Vector Research	40820ES	Hieff Trans™ PEI Transfection Reagent	1.5 mL/10 mL/100 mL
	40823ES	Hieff Trans™ UltraAAV Transfection Reagent	1 mL/10 mL/100 mL
	40824ES	Hieff Trans™ UltraAAV Transfection Reagent-GMP	10 mL/100 mL/1 L
Protein Expression	40828ES	Hieff Trans™ UltraPRO-CHO Transfection Reagent Kit	1000 mL

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