

고성능, animal free, 폭넓은 DNA 스펙트럼을 자랑하는 transfection 시약

TransIT[®]-2020 Transfection Reagent

■ Transfection이란?

전통적으로 transfection은 배양된 eukaryotic cell에 바이러스를 사용하지 않고 외부의 DNA를 세포 내로 도입하는 것을 의미하였으나, 최근의 transfection은 단지 DNA만이 아니라 어떠한 naked nucleic acid molecule들을 배양된 eukaryotic cell에 도입하는 것을 말한다 (그림 1).

효율적인 transfection을 위해서는 핵산과 transfection 시약의 비율, transfection의 복합체 형성기간, transfection 시 세포밀도, transfection 후 세포수확까지의 시간 등 다양한 실험요인을 모두 고려해야 한다.

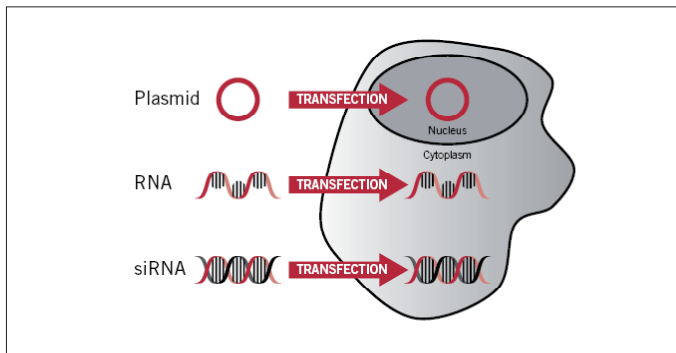


그림 1. 다양한 핵산의 transfection

■ TransIT[®]-2020의 특징

TransIT[®]-2020 Transfection Reagent (TaKaRa Code V5400)는 다양한 범위의 mammalian cell에 적용할 수 있는 새로운 plasmid DNA 도입용 transfection 시약이다. Transient 또는 stable transfection에 적용할 수 있을 뿐만 아니라 transfection이 어려운 cell line에도 높은 형질전환 효율을 나타낸다 (그림 2). 또한, TransIT[®]-2020은 animal-origin free component로 구성되어 있으며, 혈청을 포함한 세포 배지에 그대로 첨가할 수 있고, transfection 후 배지 교환이 필요없기 때문에 사용이 매우 편리하다.

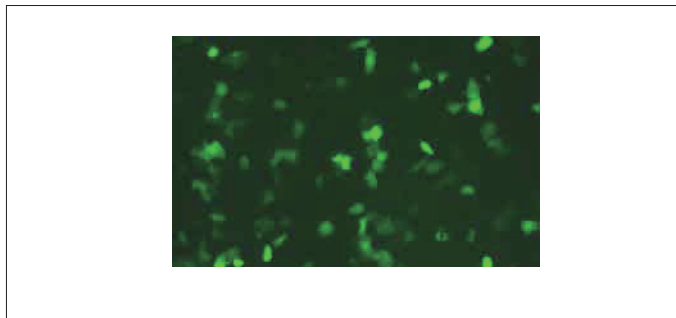


그림 2. High Performance Plasmid Transfection. Primary Human Small Epithelial Cells (HSAEpic) were transfected using TransIT-2020 and an EGFP expression plasmid (4:1 reagent-to-DNA ratio). Images were taken 24 hours post-transfection using a Zeiss axiovert inverted fluorescence microscope.

■ TransIT[®]-2020 시리즈

제품명	용량	TaKaRa Code
TransIT [®] -2020 Transfection Reagent	0.4 ml	V5404
TransIT [®] -2020 Transfection Reagent	1 ml	V5400
TransIT [®] -2020 Transfection Reagent	5 x 1 ml	V5405
TransIT [®] -2020 Transfection Reagent	10 x 1 ml	V5406

■ TransIT[®]-2020의 적용에

[방법]

실험실에서 주로 사용하는 4 종류의 cell line (HEK 293, K562, CHO-K1, and primary MEF cell)에 luciferase를 발현하는 plasmid를 transfection 하였다. 타사와의 transfection 효율을 비교하기 위해 TransIT[®]-2020 외에 널리 사용되는 3 종류의 transfection 시약을 함께 사용하였다. Transfection은 24-well plate를 이용하였고 각 well당 0.5 μ g을 사용하였다. 시약의 사용량 및 실험법은 제조사에서 권장하는 매뉴얼에 따랐으며, Transfection 후 24 시간이 지난 다음 세포를 회수하여 luciferase의 활성을 측정하였다.

[결과]

함께 실험한 타사 제품과 비교하여 TransIT[®]-2020을 이용하였을 때 4 종류의 cell line에서 모두 매우 높은 수준으로 luciferase 유전자가 발현됨을 확인하였다(그림 3).

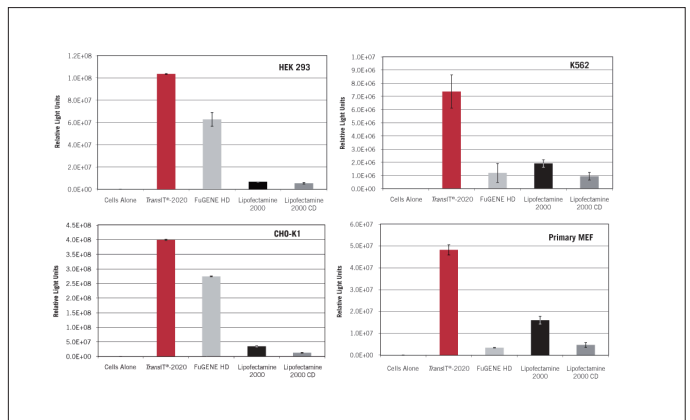


그림 3. Superior Gene Expression in a Broad Spectrum of Cell Types.

Experimental Details: Luciferase gene expression was compared in HEK 293, K562, CHO-K1, and primary MEF cells transfected with a luciferase expression plasmid using TransIT-2020 (Mirus Bio, 3:1 reagent to DNA ratio), FuGENE HD (Roche, 7:2 reagent to DNA ratio), Lipofectamine[™] 2000 (Invitrogen, 5:2 reagent to DNA ratio), and Lipofectamine[™] 2000 CD (Invitrogen, 5:2 reagent to DNA ratio). Transfections were performed in 24-well plates using 0.5 μ g of plasmid DNA per well. The optimal level of each transfection reagent was determined empirically and all reagents were used according to manufacturer's protocol. Cells were harvested at 24 hours post-transfection and assayed for luciferase activity, Error bars represent the standard deviation of triplicate wells.

■ **TransIT[®]-2020 transfection 시약이 적용된 cell line**

Cell Line	Description	사용 연구자 검증	Mirus 검증
2B4.11	Mouse T-lymphocyte hybridoma cell line	○	
A549	Human lung carcinoma cell line	○	
C3H/10T1/2	Clonal mouse embryo cell line	○	
C6	Rat glioma cell line		○
CCD-18Co	Human colonic myofibroblast cell line	○	
CHO-K1	Chinese hamster ovary cell line	○	○
Colon 38	Mouse colon adenocarcinoma cell line	○	
COS-7	Monkey kidney fibroblast-like cell line	○	○
Daoy	Human medulloblastoma cell line		○
DB-TRG-05MG	Human glioma cell line		○
DI-TNC1	Rat astrocytoma cell line		○
HCT 116	Human colorectal carcinoma cell line	○	
HEK-293	Human embryonic kidney cell line	○	○
HEK-293F	Human embryonic kidney cell line	○	
HEK-293T	Human embryonic kidney cell line	○	
HeLa	Human cervix adenocarcinoma		○
HepG2	Human hepatocellular carcinoma cell line		○
HL-1	Mouse atrial cardiomyocyte tumor cell line	○	
HPTC	Human thyroid carcinoma cell line	○	
INS-1	Rat insuloma cell line	○	
J774A.1	Mouse monocyte/macrophage sarcoma cell line	○	
Jurkat	Human T-lymphocyte leukemia cell line		○
K-562	Human myelogenous leukemia cell line		○
KYSE 410	Human oesophageal cancer cell line	○	
LS180	Human colon adenocarcinoma cell line	○	
MCF-7	Human mammary gland adenocarcinoma cell line	○	
MDA-MB-231	Human mammary gland adenocarcinoma cell line	○	
Monc-1	Mouse neural crest stem cell line	○	
NCCIT	Human teratocarcinoma cell line	○	
NCI-H522	Human lung adenocarcinoma cell line	○	
NE-1	Human oesophageal cancer cell line	○	
Neuro-2a	Mouse neuroblastoma cell line		○
NIH-3T3	Mouse embryonic fibroblast cell line	○	○
NRK-52E	Rat kidney epithelial cell line	○	
PC-12	Rat adrenal gland pheochromocytoma cell line	○	
Phoenix [™] Eco	Human embryonic kidney cell line	○	
RAW 264.7	Mouse monocyte/macrophage tumor cell line	○	
RGC-5	Rat retinal ganglion cell line	○	
Saos-2	Human osteosarcoma cell line	○	
SH-EP1	Human neuroblastoma cell line	○	
SH-SY5Y	Human neuroblastoma cell line	○	
SK-N-BE(2)	Human neuroblastoma cell line	○	
T-98G	Human glioblastoma cell line	○	
TE-8	Human oesophageal cancer cell line	○	
U2OS	Human osteosarcoma cell line	○	
Vero	Monkey kidney epithelial cell line		○

■ **TransIT[®]-2020 transfection 시약이 적용된 primary와 stem cell line**

Primary or Stem Cells	사용 연구자 검증	Mirus 검증
Human airway epithelial cells	○	○
Human astrocytes	○	
Human ES cell derived neural progenitors	○	
Human mesenchymal stem cells	○	
Human osteoblasts	○	
Human skin fibroblasts	○	
Mouse cortical neurons (E18)	○	
Mouse embryo fibroblasts	○	○
Mouse ES cell derived cardiomyocytes	○	
Mouse osteoblasts	○	
Rat aortic smooth muscle cells (SV40 Large T-antigen transformed)	○	