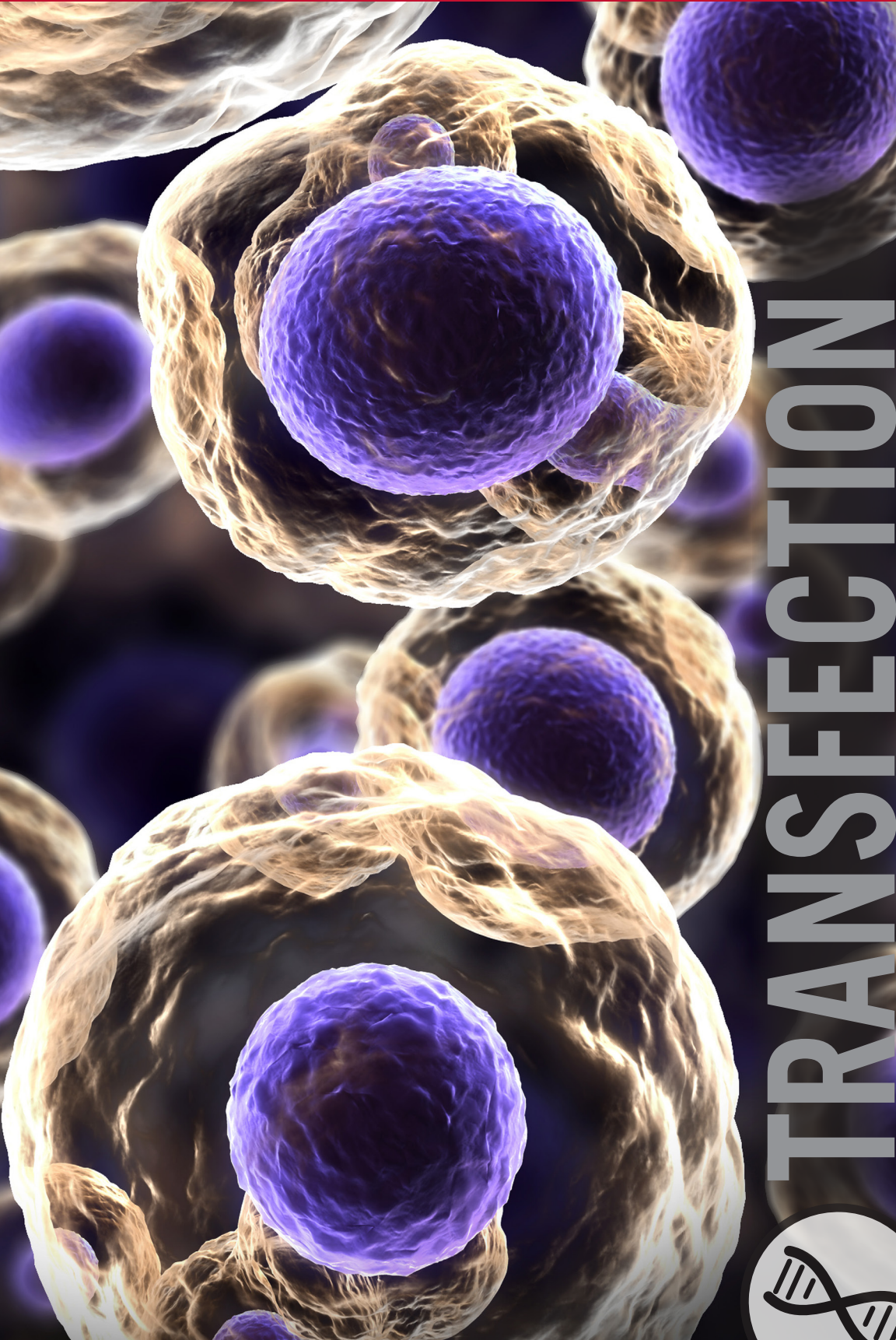




mirusbio.com



TRANSFECTION



PROGRAMMING THE GENOME:

Any Delivery Method. Any Nucleic Acid. Any Cell Type.

At Mirus Bio, our role in PROGRAMMING THE GENOME is to provide scientists turnkey tools to ADD, DELETE or MODIFY any gene at will. We accomplish this through support of ANY DELIVERY METHOD, capable of delivery of ANY NUCLEIC ACID into ANY CELL TYPE. Whether there is a need for high functional virus titers, or efficient knockdown of target genes, or effective, low toxicity solutions, our delivery systems for molecular and cell biology applications give researchers unprecedented genome control at their fingertips.

Highlighted within this brochure is our portfolio of delivery methods that include chemical transfection, electroporation and viral transduction to support relevant cell culture workflows with the best possible experimental results.

MOST RECENT BREAKTHROUGHS

2017: *TransT*-VirusGEN®—Ideal for recombinant adeno-associated virus production

2016: *TransT*®-Lenti—Ideal for high titer recombinant lentivirus production

2015: *CHOgro*® Expression System—High titer transient transfection for suspension CHO cells

2014: *TransT*®-Insect—Optimal insect cell transfection for transgene & baculovirus expression

2013: *TransT*-X2® Dynamic Delivery System—Superior delivery of plasmid DNA and/or siRNA

2013: *TransT*®-BrCa Transfection Reagent—The first breast cancer cell transfection reagent

2010: *TransT*-PRO® Transfection Kit—Large-scale, high yield protein production

2009: *TransT*®-2020 Transfection Reagent—For hard to transfect cell types

2008: *Ingenio*® Electroporation Kits & Solution—Versatile, multi-platform electroporation solution

OUR PROMISE TO YOU: SERVICE THROUGH EXPERTISE

Order Online 24/7 (Credit Cards or Purchase Orders)

www.mirusbio.com

Customer Service

Hours of Operation: 8:00 AM–4:00 PM Central Time, Monday–Friday

Customer Service Email: sales@mirusbio.com

Customer Service Phone: 888.530.0801 (toll free in the U.S.) or +1.608.441.2852

Fax: +1.608.441.2849

Technical Support

Hours of Operation: 8:00 AM–4:00 PM Central Time, Monday–Friday

Technical Support Email: techsupport@mirusbio.com

Technical Support Hotline: 844.MIRUSBIO (toll free in the U.S.) or +1.608.441.2852

International Distribution

For a complete list of our worldwide distributors, please visit: www.mirusbio.com and contact the distributor in your region.

Mail

Mirus Bio LLC

Attention: Customer Service

545 Science Drive

Madison, WI 53711 USA

Not sure where to start?



START WITH: Reagent Agent®

To determine the best reagent for your experiment, view citations, customer feedback, and in-house transfection data, with the Reagent Agent® Transfection Database: www.mirusbio.com/RA



PROVE IT TO YOURSELF: Request a **FREE** Sample

Visit: www.mirusbio.com/sample -OR-
Call: +1-608-441-2852



CHEMICAL TRANSFECTION

Ideal for: Multiple Nucleic Acid Formats Into A Broad Range of Cell Types

<i>TransIT</i> -X2® Dynamic Delivery System	2-7
---	-----

Ideal for: Plasmid DNA Transfection

<i>TransIT</i> -LT1 Transfection Reagent	8-9
<i>TransIT</i> ®-2020 Transfection Reagent	10-11

Ideal for: Specific Cell Types

<i>TransIT</i> ®-293 Transfection Reagent	12
<i>TransIT</i> ®-BrCa Transfection Reagent	12
<i>TransIT</i> ®-CHO Transfection Kit	12
<i>TransIT</i> -HeLaMONSTER® Transfection Kit	12
<i>TransIT</i> ®-Insect Transfection Reagent	13
<i>TransIT</i> ®-Jurkat Transfection Reagent	13
<i>TransIT</i> ®-Keratinocyte Transfection Reagent	13

Ideal for: siRNA/miRNA

<i>TransIT</i> -TKO® Transfection Reagent	14-15
<i>TransIT</i> -siQUEST® Transfection Reagent	14-15

Ideal for: Large RNA (Viral RNA, mRNA & CRISPR/Cas9)

<i>TransIT</i> ®-mRNA Transfection Kit	16-17
--	-------

Ideal for: Insect Cell Transfection & Baculovirus Production

<i>TransIT</i> ®-Insect Transfection Reagent	18-19
--	-------

Ideal for: Protein & Antibody Production

CHOgro® Expression System	20-22
<i>TransIT</i> -PRO® Transfection Kit	23-24



ELECTROPORATION

Ideal for: Plasmid DNA, RNA, siRNA, miRNA and RNP Delivery

Ingenio® Electroporation Kit	25-28
Ingenio® Electroporation Solution	25-28
Ingenio® Electroporation Accessories	25-28



VIRUS PRODUCTION

Ideal for: Lentivirus and Adeno-associated Virus (AAV) Production

<i>TransIT</i> ®-Lenti Transfection Reagent	29-31
NEW <i>TransIT</i> ® Lentivirus System and Lentivirus Packaging Mix Powered by MISSION®	29
NEW <i>TransIT</i> -VirusGEN® Transfection Reagent	32

Multiple Nucleic Acid Formats Into A Broad Range of Cell Types

TransIT-X2[®] DYNAMIC DELIVERY SYSTEM

- **High Efficiency**—Exceptional broad spectrum transfection
- **Versatile**—Cutting edge delivery of plasmid DNA, siRNA/miRNA, or ribonucleoprotein (RNP) complexes
- **Technology**—Novel, non-liposomal, polymeric delivery

PRODUCT NO.	QUANTITY
MIR 6003	0.3 ml
MIR 6004	0.75 ml
MIR 6000	1.5 ml
MIR 6005	5 x 1.5 ml
MIR 6006	10 x 1.5 ml

To inquire about bulk pricing, please call +1.608.441.2852

We recently tested the *TransIT-X2*[®] Dynamic Delivery System **head-to-head against Lipofectamine[®] 2000 for DNA transfection** of NIH-3T3 fibroblasts and the breast cancer cell line ZR-75-1. We observed **higher efficiency and less toxicity** when using *TransIT-X2*[®]. We are also pleased to hear that *TransIT-X2*[®] will be offered in similar volume configurations to Lipofectamine[®] 2000.

Dr. Edwin Li, Assistant Professor
Saint Joseph's University

Description

Achieve superior transfections with an innovative polymeric system that efficiently delivers both DNA and RNA out of the endosome and into the cytoplasm, overcoming a critical barrier to nucleic acid delivery.

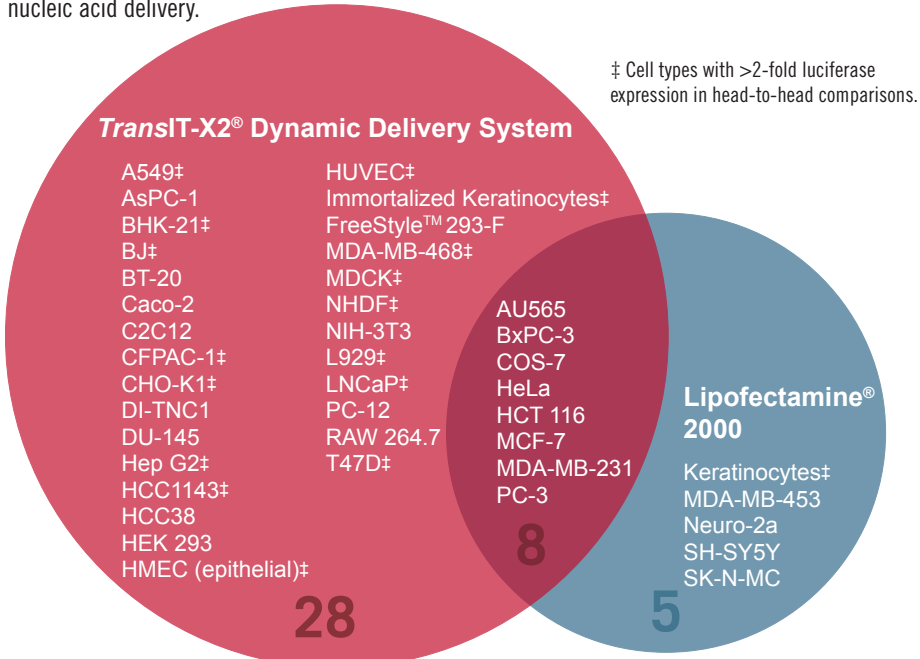


FIGURE 1. The *TransIT-X2*[®] Dynamic Delivery System Enables Superior Gene Expression in a Variety of Cell Types. The *TransIT-X2*[®] Dynamic Delivery System (Mirus Bio) and Lipofectamine[®] 2000 Transfection Reagent (Thermo Fisher Scientific) were used to transfect plasmid DNA encoding luciferase into 41 different cell types at three reagent-to-DNA ratios. Luciferase expression was compared at 24 hours post-transfection using a standard luciferase assay. Head-to-head comparisons at optimized ratios illustrate superior or equal luciferase expression using *TransIT-X2*[®] (Mirus Bio) in 36 of 41 cell types; 17 cell types that had expression levels 2-fold higher are denoted with ‡.



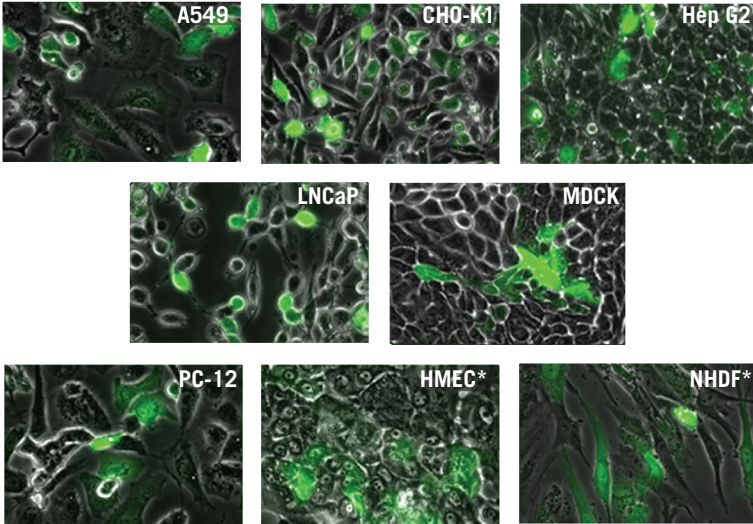


FIGURE 2. Visualization of High GFP Expression Using the *TransIT-X2[®]* Dynamic Delivery System. The *TransIT-X2[®]* Dynamic Delivery System (Mirus Bio) was used to transfect plasmid DNA encoding EGFP into A549, CHO-K1, Hep G2, LNCaP, MDCK, PC-12, primary human mammary epithelial cells (HMEC) and primary normal human dermal fibroblasts (NHDF). Transfections were performed in 35 mm dishes (MatTek) using 4-8 μ l of *TransIT-X2[®]* (Mirus Bio) to deliver 2 μ g of DNA. Images (32X) were captured at 48 hours post-transfection using a Zeiss Axiovert S100 inverted fluorescence microscope. *Indicates primary cell types.

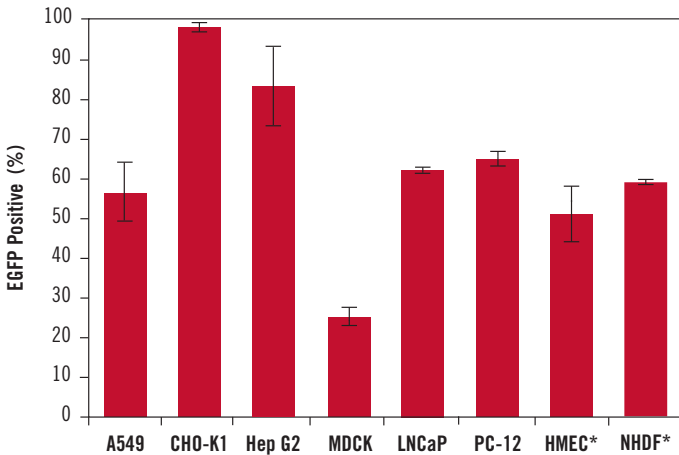


FIGURE 3. High GFP Transfection Efficiency in Multiple Cell Lines and Primary Cells Using the *TransIT-X2[®]* Dynamic Delivery System. The *TransIT-X2[®]* Dynamic Delivery System (Mirus Bio) was used to transfect plasmid DNA encoding EGFP into A549, CHO-K1, Hep G2, MDCK, LNCaP, PC-12, primary human mammary epithelial cells (HMEC) and primary normal human dermal fibroblasts (NHDF). Transfections were performed in 96-well plates using 0.2-0.4 μ l of *TransIT-X2[®]* (Mirus Bio) to deliver 0.1 μ g of DNA (2:1, 3:1 or 4:1 reagent:DNA ratio). Triplicate wells were assayed 48 hours post-transfection on a guava[®] easyCyte[™] 5HT Flow Cytometer (MilliporeSigma). *Indicates primary cell types.

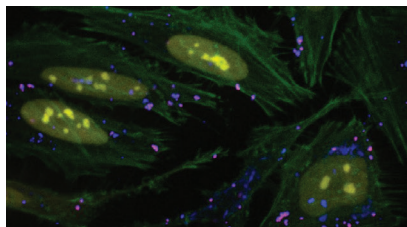


FIGURE 4. Functional Co-delivery of Plasmid DNA and siRNA Using the TransIT-X2[®] Dynamic Delivery System. The TransIT-X2[®] Dynamic Delivery System (Mirus Bio) was used to transfect plasmid Cy[®]5 labeled DNA encoding nuclear YFP and Cy[®]3 labeled siRNA into HeLa cells. Transfection was performed in a 6-well plate with Poly-L-Lysine (PLL) coated coverslips using 4 μ l of TransIT-X2[®] (Mirus Bio) to deliver 2 μ g of DNA (2:1 reagent:DNA ratio) and 25 nM siRNA. Actin cytoskeleton was stained using Alexa Fluor[®] 350 Phalloidin (Thermo Fisher Scientific). Image (63X) was captured at 24 hours post-transfection using a Nikon A1R confocal microscope. Image key: yellow (nuclear YFP), blue (Cy[®]5 labeled DNA), red (Cy[®]3 labeled siRNA), green (actin cytoskeleton).

We work on non-small cell lung cancer (NSCLC) which is an adherent cell culture line. Previously, we have tested many transfection products from several companies without much success, but the **TransIT-X2[®] Dynamic Delivery System works very well with NSCLC** using my protocol.

Dr. Luo Wang,
University of Michigan
Comprehensive Cancer Center

The **TransIT-X2[®] Dynamic Delivery System** outperformed all other transfection reagents we have tested for DNA transfection of our C2C12 mouse myoblast cell line. In addition, **TransIT-X2[®] was also less toxic.**

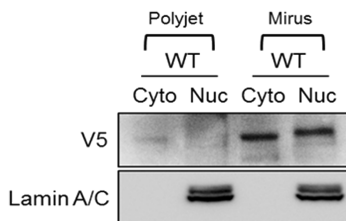
Dr. G. Du, Assistant Professor
Texas Medical Center

We are pleased with the performance of the **TransIT-X2[®] Dynamic Delivery System** when transfecting our renal carcinoma cell line 786-0.

Sathish Padi,
North Dakota State University

The **TransIT-X2[®] Dynamic Delivery System** performed better than our regular transfection reagent (Polyjet) for delivering DNA into the hard to transfect A549 cell line. **TransIT-X2[®] was able to show protein expression compared to Polyjet which failed to produce detectable levels of protein containing V5 tag.**

Jason Liggett and Kyung-Won Min, Baek Lab
University of Tennessee



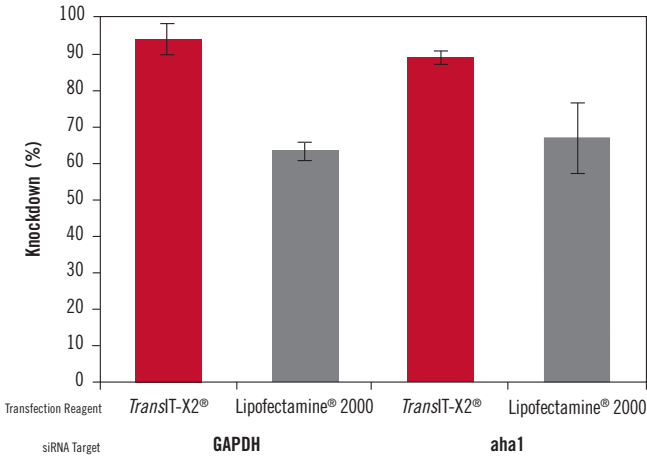


FIGURE 5. The *TransIT-X2[®] Dynamic Delivery System* Achieves Higher Knockdown than *Lipofectamine[®] 2000*. The *TransIT-X2[®] Dynamic Delivery System* (Mirus Bio) and *Lipofectamine[®] 2000* Transfection Reagent (Thermo Fisher Scientific) were used to transfect siRNA targeting endogenous proteins - GAPDH and aha1 or to deliver a non-targeting control in primary normal human dermal fibroblasts (NHDF). Cells were transfected in a 6-well plate using 4 μ l of *TransIT-X2[®]* (Mirus Bio) or 6 μ l of *Lipofectamine[®] 2000* (Thermo Fisher Scientific) and 25 nM siRNA according to each manufacturer's protocol. The amount of GAPDH or aha1 mRNA was measured relative to 18s rRNA levels using qRT-PCR and then scaled to the mRNA levels of the negative control, 48 hours post-transfection. Error bars represent the standard deviation of triplicate wells.

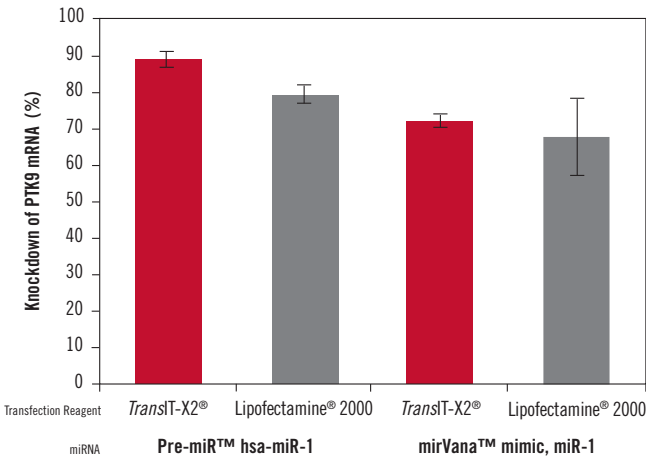
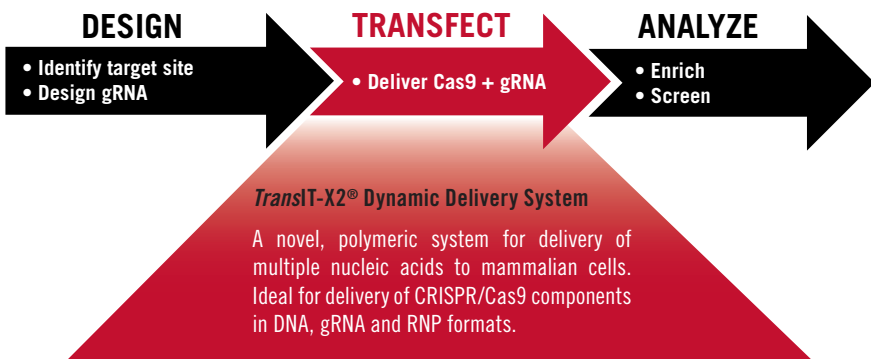


FIGURE 6. Effective miRNA Delivery Using The *TransIT-X2[®] Dynamic Delivery System* Yields Decreased Levels of PTK9 mRNA. The *TransIT-X2[®] Dynamic Delivery System* (Mirus Bio) and *Lipofectamine[®] 2000* Transfection Reagent (Thermo Fisher Scientific) were used to transfect T47D cells with Pre-miR[™] hsa-miR-1 miRNA Precursor (Thermo Fisher Scientific) or mirVana[™] miRNA mimic (Thermo Fisher Scientific), miR-1, both known to decrease PTK9 mRNA levels. A Pre-miR negative control was transfected to assess baseline mRNA levels. Cells were transfected in a 12-well plate using 3 μ l of *TransIT-X2[®]* (Mirus Bio) or *Lipofectamine[®] 2000* (Thermo Fisher Scientific) and 50 nM miRNA according to each manufacturer's protocol. The amount of PTK9 mRNA was measured relative to 18s rRNA levels using qRT-PCR and then scaled to the mRNA levels of the negative control, 48 hours post-transfection. Error bars represent the standard deviation of triplicate wells.

CRISPR Gene Editing Workflow Using *TransIT-X2*®



Plasmid DNA and Guide RNA Oligonucleotide Transfection

Cas9 protein and guide RNA can both be encoded by plasmid DNA for transfection. Alternatively, Cas9 can be delivered as plasmid DNA, and guide RNA can be supplied as an RNA oligonucleotide. Benefits of these approaches include:

- **Low Cost** - Plasmid DNA is a renewable, cost-effective format
- **Flexibility** - Cas9 and guide RNA plasmids are suitable for stable or transient transfection
- **Ease-of-use** - Guide RNA oligonucleotide format enables simple retargeting of Cas9 to different loci

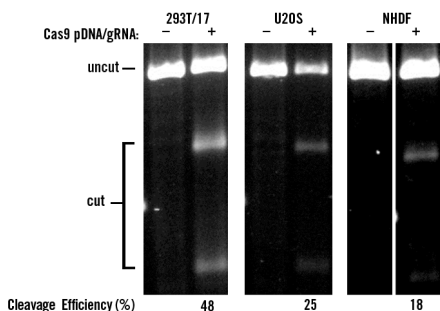


FIGURE 7. Efficient Genome Editing with Cas9 Plasmid DNA and Guide RNA Oligonucleotides. HEK293T/17, U2OS and NHDF cells were co-transfected with 0.5 µg of Cas9 encoding pDNA (MilliporeSigma) and 50nM PPIB targeting two-part gRNA (Dharmacon/GE Healthcare) using The *TransIT-X2*® Dynamic Delivery System (2 µl/well of a 24-well plate, Mirus Bio). A T7E1 mismatch detection assay was used to measure cleavage efficiency at 48 hours post-transfection.

“I was recently tasked with developing a CRISPR protocol for primary and bone-derived cell lines. *TransIT-X2*® was simple to use, 2-3 times better for transfection and much gentler on my cells than other products! I feel I have hit the jackpot and have already passed this exciting information on to my colleagues.”

Joshua Chou, Ph.D.
 Harvard School of Dental Medicine



Cas9/gRNA Ribonucleoprotein (RNP) Transfection

Purified Cas9 protein can be combined with guide RNA to form an RNP complex to be delivered to cells for rapid and highly efficient genome editing. Benefits of RNP-based genome editing include:

- **High Efficiency Delivery** - Deliver Cas9/gRNA complexes to multiple cell types, including hard to transfect cells such as immune and stem cells
- **High Specificity** - Pre-formed RNP complexes provide a rapid pulse of genome editing activity
- **DNA Free** - No risk of insertional mutagenesis

FIGURE 8. *TransIT-X2[®]* Outperforms Other Reagents for RNP Delivery.

Ribonucleoprotein (RNP) complexes composed of PPIB (cyclophilin B) targeting 2-part gRNA (IDT) and Cas9 protein (PNA Bio) were delivered into (A) HEK293T/17 and (B) U2OS cells using *TransIT-X2[®]* Dynamic Delivery System (1 μ l/well, Mirus Bio) or Lipofectamine[®] CRISPRMAX[™] (1.5 μ l/well and 1 μ l/well of Lipofectamine[®] Cas9 Plus[™] Reagent, ThermoFisher) or Lipofectamine[®] RNAiMAX (1.5 μ l/well, ThermoFisher) or Lipofectamine[®] 3000 (1.5 μ l/well and 1 μ l/well of P3000[™] Reagent, ThermoFisher) in a 24-well format according to the manufacturers' protocol. Varying levels of gRNA (6 nM or 12 nM) were tested with 6 nM Cas9 protein (PNA Bio). A T7E1 mismatch detection assay was used to measure cleavage efficiency at 48 hours post-transfection.

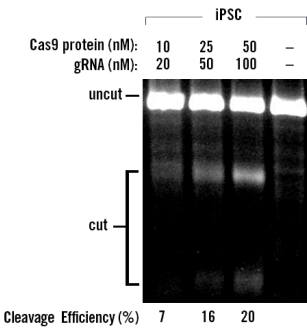
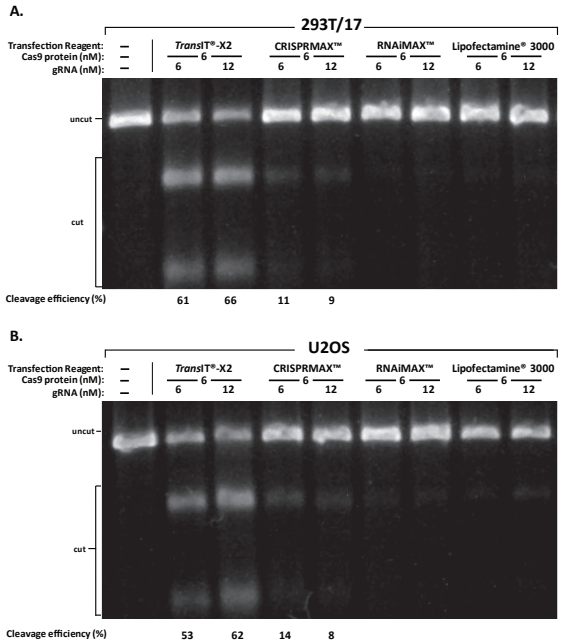


FIGURE 9. Genome Editing in iPSC Cells with Cas9 + Guide RNA Ribonucleoprotein Complexes. The *TransIT-X2[®]* Dynamic Delivery System was used to deliver Cas9 protein/guide RNA ribonucleoprotein (RNP) complexes in human induced pluripotent stem cells (iPSCs). A T7E1 mismatch assay was used to measure cleavage efficiency at 48 hours post-transfection.

For more on CRISPR/Cas9 delivery, please see Page 17 for gRNA ribonucleoprotein delivery with *TransIT[®]*-mRNA and Page 26 for RNP delivery with Ingenio[®] Electroporation Solution.

CHEMICAL TRANSFECTION

TransIT®-LT1 TRANSFECTION REAGENT

- **Broad Spectrum DNA Delivery**—Utilize one transfection reagent and protocol for a variety of cells
- **Low Cellular Toxicity**—Maintain cell density and reduce experimental biases
- **Deliver Single or Multiple Plasmids**—Suitable for many applications such as gene expression, shRNA expression, virus production and promoter analysis

PRODUCT NO.	QUANTITY
MIR 2304	0.4 ml
MIR 2300	1.0 ml
MIR 2305	5 x 1.0 ml
MIR 2306	10 x 1.0 ml

To inquire about bulk pricing, please call +1.608.441.2852

IDEAL FOR USE IN VIRUS PRODUCTION



We routinely use Mirus *TransIT*®-LT1 Transfection Reagent for the delivery of plasmid DNA to carry out immunoprecipitation experiments. **Our lab recently published using *TransIT*®-LT1 for this application to reveal a crucial regulator (MCUR1) for calcium uptake in the mitochondria to regulate cellular metabolism.**" (Mallilankaraman, K *et al. Nature Cell Biology*. December 2012).

Dr. Karthik Mallilankaraman,
Madesh Laboratory, Center for Translational Medicine, Temple University

Description

The *TransIT*®-LT1 (Low Toxicity) Reagent is a broad spectrum, high efficiency DNA transfection reagent that is easy to use and exhibits minimal cellular toxicity. This reagent is a proprietary formulation of polyamines and cationic lipids that efficiently transfects cells in the presence of serum.

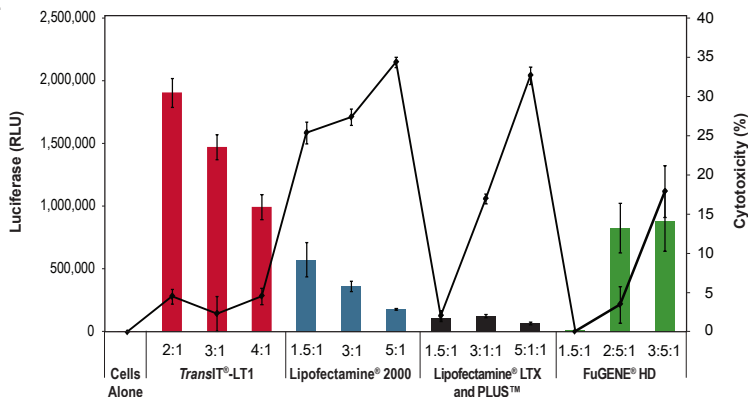


FIGURE 10. *TransIT*®-LT1 Reagent Exhibits Higher Expression and Lower Cellular Toxicity Compared to Other Transfection Reagents. Hep G2 cells were transfected with a luciferase expression plasmid using the designated reagents at the manufacturers' recommended reagent-to-DNA ratio indicated beneath each bar. Luciferase expression (bar graph) and lactate dehydrogenase (LDH) levels (line graph) were measured at 24 hours post-transfection. LDH levels are reported as percent cytotoxicity compared to cells alone. Experiments were performed as per industry accepted testing protocols. FuGENE is a registered trademark of Fugent LLC.



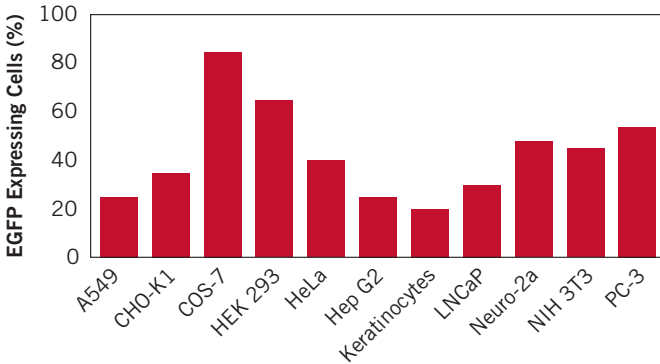


FIGURE 11. The *TransIT*®-LT1 Reagent Efficiently Delivers DNA to a Wide Variety of Cell Lines. Using the *TransIT*®-LT1 Transfection Reagent (Mirus Bio), cells were transfected with the pEGFP-C1 expression vector, and the percentage of EGFP expressing cells was determined 24-48 hours post-transfection by flow cytometry.

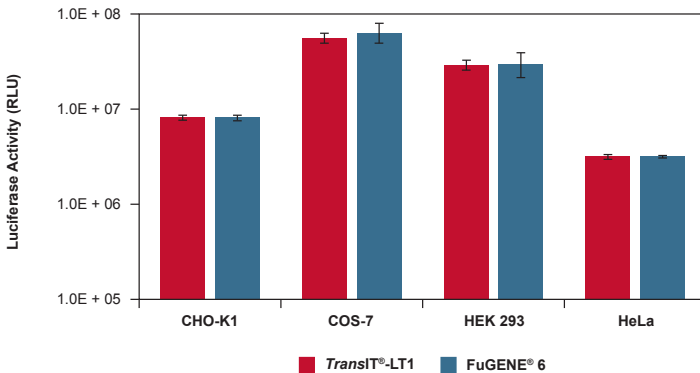


FIGURE 12. Comparable Luciferase Expression With *TransIT*®-LT1 Reagent and FuGENE® 6 in Multiple Cell Types. The indicated cell lines were transfected in duplicate with 1 µg of a luciferase expression vector per well of a 12-well plate using either 3 µl of *TransIT*®-LT1 (Mirus Bio) or FuGENE® 6 Reagents (Fugent LLC) according to industry accepted testing protocols. Cells were harvested 24 hours post-transfection and assayed for luciferase activity. FuGENE is a registered trademark of Fugent LLC.

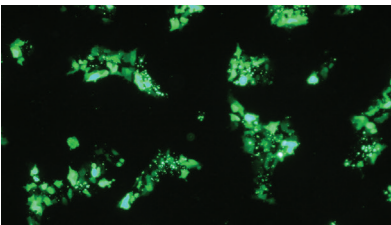


FIGURE 13. Exceptional Transfection Efficiency in Human Induced Pluripotent Stem Cells (iPSCs) via Reverse Transfection with the *TransIT*®-LT1 Transfection Reagent. The *TransIT*®-LT1 Transfection Reagent (Mirus Bio) was used to reverse transfect 1.3×10^6 iPSC cells with a ZsGreen expressing plasmid (Clontech). Cells were visualized 48 hours post-transfection.

Data courtesy of Cellular Dynamics International (CDI), a FUJIFILM Company.

TransIT®-2020 TRANSFECTION REAGENT

- **Broad Spectrum DNA Delivery**—Achieve high expression in many cell types, including hard-to-transfect and primary cells
- **Outperforms Competitor Reagents**—*TransIT*®-2020 demonstrates higher protein yield and less toxicity when compared to other transfection reagents
- **Animal Origin Free**—provides high performance with maximum compatibility

PRODUCT NO.	QUANTITY
MIR 5404	0.4 ml
MIR 5400	1.0 ml
MIR 5405	5 x 1.0 ml
MIR 5406	10 x 1.0 ml

To inquire about bulk pricing, please call +1.608.441.2852



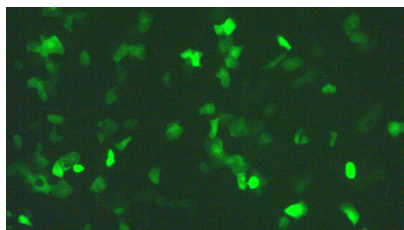
Using *TransIT*®-2020, we transfected HeLa cells in 6-well plates with 1.25 µg of the Zheng lab construct (pX330) from Addgene that harbors both a specific guide RNA against a recognition sequence in our gene of choice, and 1.25 µg of a donor plasmid with 1 kb of 5' and 3' homology sequence. We then selected the cells using puromycin and came across a population that harbored the modification we were interested in. Thank you so much for the sample of *TransIT*®-2020. **Mirus has always been without exception the gold standard for me and why anyone else would want to use anything else is just beyond me.**

Aviva Joseph,
University of Massachusetts Medical School

Description

TransIT-2020® Reagent is a versatile transfection solution for broad spectrum DNA delivery into mammalian cells. This reagent is animal component free allowing maximum compatibility for all downstream applications while outperforming major competitors in most cell types.

FIGURE 14. High Performance Plasmid Transfection. Primary Human Small Epithelial cells (HSAEpic) were transfected using *TransIT*®-2020 (Mirus Bio) and an EGFP expression plasmid (4:1 reagent-to-DNA ratio). Images were taken 24 hours post-transfection using an inverted fluorescence microscope (Zeiss Axiovert).



I recently tested *TransIT*®-2020 and *TransIT*®-LT1, and both reagents worked well in terms of their efficiency at transfecting human-derived iPS cells with CRISPR constructs and a fluorescent protein reporter. Through visual inspection, transfection efficiencies with *TransIT*®-2020 and *TransIT*®-LT1 were clearly higher than with Lipofectamine® 3000.

Fedir Kiskin,
University of Cambridge



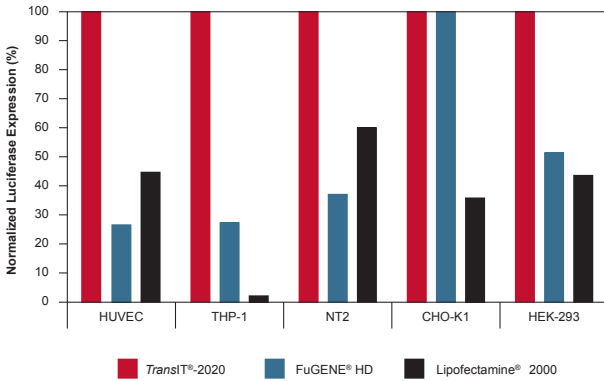


FIGURE 15. Superior Gene Expression in a Broad Spectrum of Cell Types. The indicated cell types were transfected in 96-well plates with a luciferase expression plasmid (0.1 µg/well) according to industry accepted testing protocols. Reagent-to-DNA ratios were optimized for each cell type: *TransIT*®-2020 (Mirus Bio, 2:1 or 3:1), FuGENE® HD (Promega, 3.5:1), Lipofectamine® 2000 (Thermo Fisher Scientific, 1.5:1, 3:1 or 5:1). Luciferase activity was measured 24 hours post-transfection. Values were normalized to *TransIT*®-2020 and presented as a percentage of luciferase expression. FuGENE is a registered trademark of Fugent LLC.

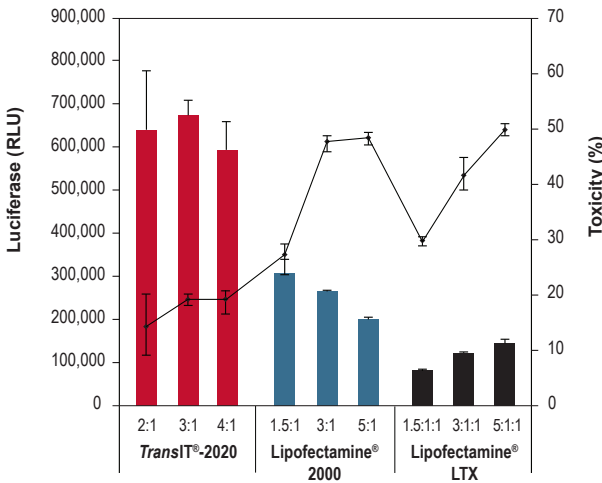


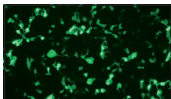
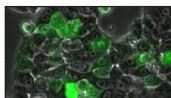
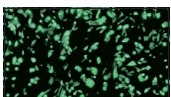
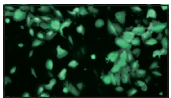
FIGURE 16. *TransIT*®-2020 Reagent Exhibits Higher Expression and Lower Cellular Toxicity Compared to Other Transfection Reagents. Human Umbilical Vein Endothelial Cells (HUVEC) were transfected with a luciferase expression plasmid using the designated reagents at the reagent-to-DNA ratios. Transfections were performed in 96-well plates. Luciferase expression (bar graph) and lactate dehydrogenase (LDH) levels (line graph) were measured at 24 hours post-transfection. LDH levels are reported as percent cytotoxicity compared to cells alone. Error bars represent the standard deviation of triplicate wells.

TransIT[®] CELL TYPE SPECIFIC TRANSFECTION REAGENTS

TransIT[®] Cell Line Specific DNA Transfection Reagents are formulated to maximize transfection efficiency while maintaining cellular health in many popular or hard-to-transfect cell types.

All of these reagents offer:

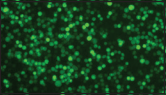
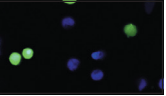
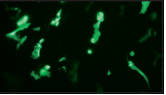
- **Optimized Formulations**—Designed for each cell type
- **Low Cellular Toxicity**—Maintain cell density and reduce experimental biases due to toxicity-induced cellular changes
- **Serum Compatible**—No media changes necessary or extensive optimization required, saving valuable research time

Product*	Applicable Cell Line(s) or Cell Type(s)	Efficiency**	Product No.	Quantity
<i>TransIT[®]-293 Transfection Reagent</i>				
	HEK 293, HEK 293T, and related	75–85%	MIR 2704	0.4 ml
			MIR 2700	1.0 ml
			MIR 2705	5 x 1.0 ml
			MIR 2706	10 x 1.0 ml
<i>TransIT[®]-BrCa Transfection Reagent</i>				
	MCF-7, MDA-MB-231, MDA-MB-453, MDA-MB-468, T47D	40–80%	MIR 5504	0.4 ml
			MIR 5500	1.0 ml
			MIR 5505	5 x 1.0 ml
			MIR 5506	10 x 1.0 ml
<i>TransIT[®]-CHO Transfection Kit (TransIT[®]-CHO Reagent & CHO Mojo Reagent)</i>				
	CHO-K1 and related	50–60%	MIR 2174	0.4 ml
			MIR 2170	1.0 ml
			MIR 2175	5 x 1.0 ml
			MIR 2176	10 x 1.0 ml
<i>TransIT-HeLaMONSTER[®] Transfection Kit (TransIT[®]-HeLa Reagent and MONSTER Reagent)</i>				
	HeLa and related	50–60%	MIR 2904	0.4 ml
			MIR 2900	1.0 ml
			MIR 2905	5 x 1.0 ml
			MIR 2906	10 x 1.0 ml

Our lab has been satisfied with the routine use of the *TransIT-HeLaMONSTER[®] Transfection Kit*. Transfections exhibit high target protein expression with very little cell toxicity. Cells remain viable post-transfection and can be readily infected with virus without any problems.

Dr. Corine St. Gelais,
The Ohio State University – Center for Retrovirus Research



Product*	Applicable Cell Line(s) or Cell Type(s)	Efficiency**	Product No.	Quantity
TransIT®-Insect Transfection Reagent				
	High Five™, S2, Sf9	—	MIR 6104	0.4 ml
			MIR 6100	1.0 ml
			MIR 6105	5 x 1.0 ml
			MIR 6106	10 x 1.0 ml
TransIT®-Jurkat Transfection Reagent				
	Jurkat, Jurkat-E6, RAW 264.7, THP-1, K562, and other lymphoid cell lines	5-10%	MIR 2124	0.4 ml
			MIR 2120	1.0 ml
			MIR 2125	5 x 1.0 ml
			MIR 2126	10 x 1.0 ml
TransIT®-Keratinocyte Transfection Reagent				
	Immortalized Keratinocyte	20–30%	MIR 2804	0.4 ml
			MIR 2800	1.0 ml
			MIR 2805	5 x 1.0 ml
			MIR 2806	10 x 1.0 ml

To inquire about bulk pricing, please call 1.608.441.2852

* Single tube reagents contain the indicated transfection reagent. Transfection reagents with two components are named "Kits" and both components are listed following the product name.

IDEAL FOR USE IN VIRUS PRODUCTION

** Transfection efficiency determined by transfection of an EGFP expression vector followed by visual quantification of the percentage of cells expressing EGFP or via flow cytometry.

TransIT®-CHO Transfection Kit is a great product. Easy to use, works well, and reasonably priced.

Matthew Nicotra,
University of Pittsburgh

TransIT-TKO® & TransIT-siQUEST® TRANSFECTION REAGENTS

- **High Knockdown Efficiency**—Achieve optimal gene silencing in a large percentage of cells to ensure experimental success
- **Low Cellular Toxicity**—Maintain cell density and reduce experimental biases due to alterations in cellular health
- **Flexible Protocol**—use with either standard or reverse transfections

We have tried other transfection reagents, but only the **TransIT-TKO® reagent gives us a 100% transfection rate and gene knockdown** without toxicity in these cells (RAW 264.7).

Nature Protocols, 1: 508 - 517 (2006)

TransIT-TKO® Transfection Reagent

PRODUCT NO.	QUANTITY
MIR 2154	0.4 ml
MIR 2150	1.5 ml
MIR 2155	5 x 1.5 ml
MIR 2156	10 x 1.5 ml

TransIT-siQUEST® Transfection Reagent

PRODUCT NO.	QUANTITY
MIR 2114	0.4 ml
MIR 2110	1.5 ml
MIR 2115	5 x 1.5 ml
MIR 2116	10 x 1.5 ml

To inquire about bulk pricing, please call +1.608.441.2852

Description

TransIT-TKO® and TransIT-siQUEST® small interfering RNA (siRNA and miRNA) Transfection Reagents are broad spectrum reagents that are easy to use and exhibit minimal cellular toxicity. Each reagent is uniquely formulated and exhibits distinct siRNA/miRNA transfection profiles. These two reagents allow the user to identify the best transfection reagent for their particular cell line.

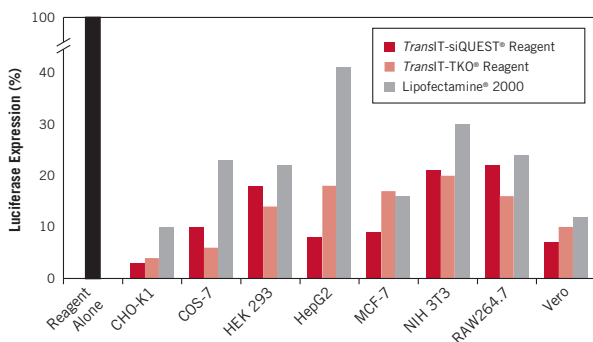


FIGURE 17. Knockdown Efficiencies Using TransIT-siQUEST®, TransIT-TKO® Reagents and Lipofectamine® 2000. Firefly and sea pansy luciferase reporter vectors were co-transfected into various cell lines using the TransIT®-LT1 Reagent (Mirus Bio). Subsequently, firefly luciferase expression was knocked down by transfection of 25 nM anti-firefly luciferase siRNA using either TransIT-siQUEST® (red, (Mirus Bio)), TransIT-TKO® (tan, (Mirus Bio)) or Lipofectamine® 2000 (gray, Thermo Fisher Scientific) Reagents. Bars indicate the percent of normalized firefly luciferase expression as compared to each reagent alone control 24 hours post-transfection.



Cell Line (Source)	Endogenous Transcript	<i>TransIT-TKO®</i> Knockdown Efficiency	<i>TransIT-siQUEST®</i> Knockdown Efficiency
A549-luc (human lung)	Luciferase*	77%	82%
BNL CL.2 (mouse liver)	MAPK1	80%	--
	MAPK3	83%	--
CHO-luc (hamster ovary)	Luciferase*	86%	91%
HEK 293-lux (human kidney)	Luciferase*	83%	77%
HeLa (human cervix)	Lamin A/C	80%	--
	GAPDH	80%	--
HeLa-luc (human cervix)	Luciferase*	84%	82%
Hepa-luc (mouse liver)	Luciferase*	--	92%
HepG2 (human liver)	MAPK1	80%	--
NIH 3T3-lux (mouse fibroblast)	Luciferase*	85%	89%
	MAPK1	70%	--
NIH 3T3-L1	MAPK3	70%	--
	Lamin A/C	80%	--
Secondary Human Astrocytes	ABC A1	70%	--
	Lamin A/C	81%	--
Primary Mouse Hepatocytes	PPAR-alpha	--	82%

TABLE 1. Knockdown of Genes Using *TransIT-TKO®* or *TransIT-siQUEST®* Transfection Reagents. Cells were transfected with siRNAs targeting the indicated genes using the *TransIT-TKO®* or *TransIT-siQUEST®* Reagents (Mirus Bio), and the knockdown percentage was determined using quantitative RT-PCR or luciferase assays.

*Firefly luciferase expression vectors were stably integrated into the parent cell lines and clonal lines constitutively expressing firefly luciferase were used.

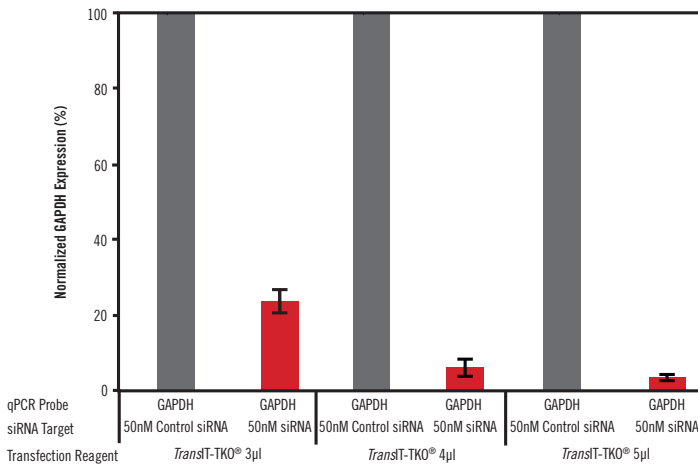


FIGURE 18. High Efficiency Endogenous Knockdown in iCell® Cardiomyocytes. The *TransIT-TKO®* Transfection Reagent (Mirus Bio) was used to transfect iCell® Cardiomyocytes (Cellular Dynamics International (CDI), a FUJIFILM Company) plated at a density of 136,500 cells per well of a 12-well plate pre-coated with fibronectin. Seven days post-plating triplicate wells were transfected with *TransIT-TKO®* (3-5 µl per well, Mirus Bio) and non-targeting control siRNA or GAPDH targeting siRNA (50nM per well). Seventy-two hours post-transfection, the amount of GAPDH mRNA was measured relative to 18s rRNA mRNA levels using qRT-PCR and then scaled to the expression level of the non-targeting control siRNA. Error bars represent the standard error of the mean (SEM) of three independent complexes.

TransIT[®]-mRNA TRANSFECTION KIT

- **High Efficiency Delivery**—Ensures experimental success by effectively transfecting RNA into a large percentage of the cell population
- **Low Cellular Toxicity**—Maintain cell density and reduce transfection induced toxicity
- **Serum Compatible**— Perform transfections in the presence of serum which eliminates the need for a media change and maintains cellular health
- **Deliver Various Sizes of RNA**—Ideal for specialized applications, such as viral production, protein expression from mRNA, and stem cell reprogramming

PRODUCT NO.	QUANTITY
MIR 2225	0.4 ml
MIR 2250	1.0 ml
MIR 2255	5 x 1 ml
MIR 2256	10 x 1 ml

To inquire about bulk pricing, please call +1.608.441.2852



Description

The TransIT[®]-mRNA Transfection Kit provides high efficiency transfection of large RNA molecules such as mRNA or viral RNA. The kit is easy to use and minimizes cellular toxicity due to its ability to transfect RNA in the presence of serum.

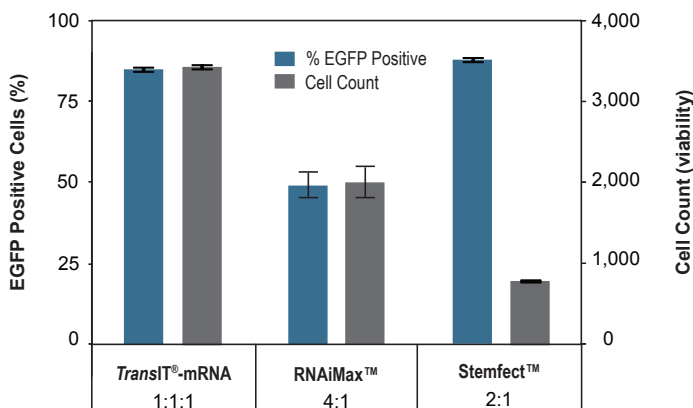


FIGURE 19. High Efficiency and Low Toxicity Transfection Following 14 Consecutive Transfections With The TransIT[®]-mRNA Transfection Kit. Repeated daily transfections were performed in the same population of BJ fibroblasts using three commercially available transfection reagents – the TransIT[®]-mRNA Transfection Kit (Mirus Bio), Lipofectamine[®] RNAiMAX (Thermo Fisher Scientific) and Stemfect™ RNA Transfection Kit (Stemgent) - with a capped and polyadenylated EGFP mRNA incorporating pseudouridine and 5mC modified bases (Trilink Biotechnologies). Multiple reagent-to-RNA ratios were tested and the optimal ratio is represented. Transfections were performed in 12-well plates using the indicated reagent-to-RNA ratios to deliver 1 µg of RNA. Transfection efficiency was measured by flow cytometry on a guava[®] easyCyte™ 5HT Flow Cytometer (MilliporeSigma) following 14 consecutive daily transfections (blue bars). Cell viability was determined using cell counts measured during flow cytometry (black line grey bars). Error bars represent the standard deviation of triplicate wells.



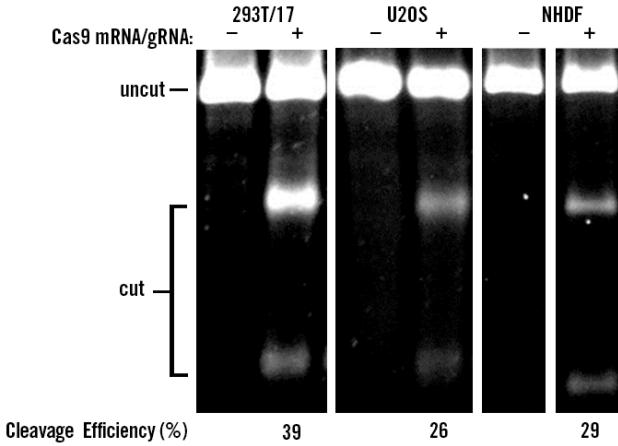


FIGURE 20. Efficient Genome Editing with Cas9 mRNA + Guide RNA Oligonucleotides. HEK293T/17, U2OS and NHDF cells were co-transfected with 0.5 μ g of Cas9 encoding mRNA, 5mC, (Trilink Biotechnologies) and 25nM of PPIB targeting two-part gRNA (Dharmacon/GE Healthcare) using *TransIT[®]-mRNA Transfection Kit* (0.5 μ l/well of 24-well plate of both mRNA reagent and boost, Mirus Bio). A T7E1 mismatch detection assay was used to measure cleavage efficiency at 48 hours post-transfection.

Please see pages 6-7 for CRISPR/Cas9 delivery with *TransIT-X2[®]* and Page 26 for RNP delivery with *Ingenio[®]* Electroporation Solution.

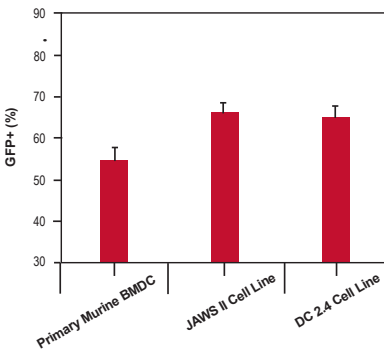
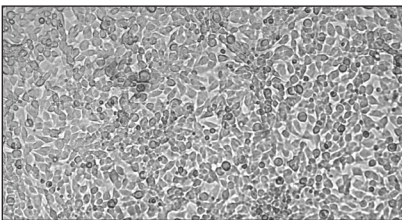
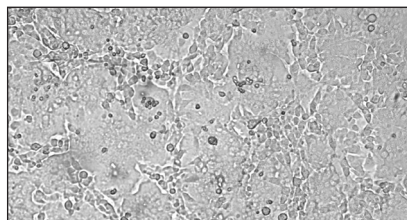


FIGURE 21. Multiple Dendritic Cell Types Express GFP From mRNA Transfected Using The *TransIT[®]-mRNA Transfection Kit*. Murine primary bone marrow derived dendritic cells (BMDC) and murine dendritic cells types (JAWS II and DC 2.4) were transfected with 1 μ g of capped and polyadenylated mRNA encoding GFP using a *TransIT[®]-mRNA Reagent* (Mirus Bio): Boost: mRNA ratio of 1:1:1 (μ l: μ l: μ g). All cells were seeded (80,000 cell/well) overnight in 24-well plates. Cells were assayed via flow cytometry 8 hours post transfection. Error bars represent the standard deviation of at least 3 separate experiments.

Data courtesy of Kyle Phua (Principal Investigator: Kam W. Leong), Duke University.



No RNA Control



MHV RNA Transfected

FIGURE 22. The *TransIT[®]-mRNA Transfection Kit* Successfully Delivers Viral RNAs 32 kb Long. A 32 kb *in vitro* transcript of the murine coronavirus, MHV, was transfected into DBT cells using the *TransIT[®]-mRNA Transfection Kit* (Mirus Bio). Successful transfection assessed by the formation of syncytia 24-48 hours post-transfection. Syncytia were visualized by phase contrast microscopy.

Data courtesy of Mark Clemenz, Loyola University of Chicago.

TransIT[®]-INSECT TRANSFECTION REAGENT

- **Exceptional DNA Delivery**—In insect cell types including Sf9, High Five™ and S2
- **High Baculovirus Production**—Ideal for baculovirus expression in insect cells
- **Serum Compatibility**—Non-liposomal, animal-origin free formulation that eliminates media change
- **Better Value**—Low reagent amounts required per transfection

PRODUCT NO.	QUANTITY
MIR 6104	0.4 ml
MIR 6100	1.0 ml
MIR 6105	5 x 1.0 ml
MIR 6106	10 x 1.0 ml

To inquire about bulk pricing, please call +1.608.441.2852



CHEMICAL TRANSFECTION

Description

Insect cell expression is a platform used to produce proteins with simple post-translational modifications. Transient transfection and recombinant baculovirus production are commonly used methods for insect cell expression. The *TransIT*[®]-Insect Transfection Reagent is an animal-origin free transfection reagent specifically optimized for high gene expression in a variety of insect cell types.

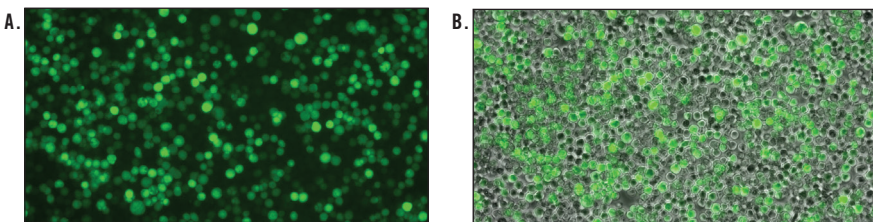


FIGURE 23. Efficient Transfection of Baculovirus Genomic DNA Using The *TransIT*[®]-Insect Reagent. Transfections were performed in 6-well plates with 5×10^5 Sf9 cells per well using the *TransIT*[®]-Insect Transfection Reagent (Mirus Bio) at the reagent-to-total DNA ratio of 3:1 (μ l: μ g). Cells were co-transfected with 0.5 μ g of ProGreen™ (AB Vector) baculovirus genomic vector DNA (AB Vector) encoding green-fluorescent protein (GFP) and 0.1 μ g of pVL1393 transfer vector (AB Vector). (A) Fluorescence and phase contrast images were taken at 6 days post-transfection using a Zeiss S100 fluorescent microscope. Merge shown in (B).

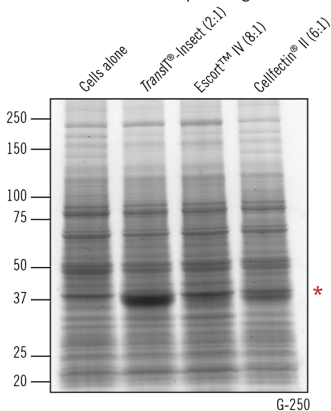


FIGURE 24. Superior Recombinant Protein Expression in High Five™ Cells Using *TransIT*[®]-Insect. High Five™ cells (Thermo Fisher Scientific) were transfected in 6-well plates with 2.5 μ g of a GFP expression plasmid driven by an hr5 enhancer/ Δ E1 promoter using the designated reagent at the indicated reagent-to-DNA ratios (μ l: μ g). Total soluble cell lysates were prepared from cells 72 hours post-transfection. Lysates from 100 μ l culture were analyzed by SDS-PAGE and Coomassie blue staining; cells alone (untransfected) is shown as control. Expressed GFP containing 6X His, S, and HSV tags (~38 kDa) was clearly detected in the lysate from the cells that were transfected (*) with the highest level of expression observed at *TransIT*[®]-Insect (Mirus Bio): DNA ratio of 2:1.



TransIT[®]-Insect Transfection Reagent continued

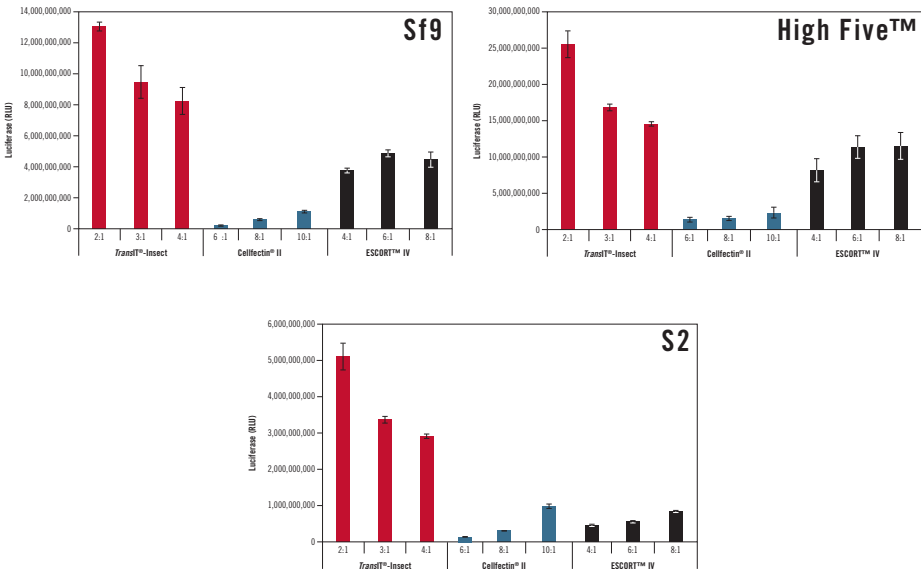


FIGURE 25. *TransIT[®]-Insect* Outperforms Competitor Transfection Reagents. Insect cell lines Sf9, High Five[™] (Thermo Fisher Scientific), and *Drosophila* S2 cells were transfected in 96-well plates with 0.1 µg of a luciferase expression plasmid driven by an hr5 enhancer/IE1 promoter using the designated reagent at the indicated reagent-to-DNA ratios (µl: µg). Luciferase expression was measured at 48 hours post-transfection. Sf9 and High Five[™] (Thermo Fisher Scientific) cells were cultured and transfected in serum-free media formulations; S2 cells were in serum containing medium. Error bars represent the standard error of the mean for triplicate wells.

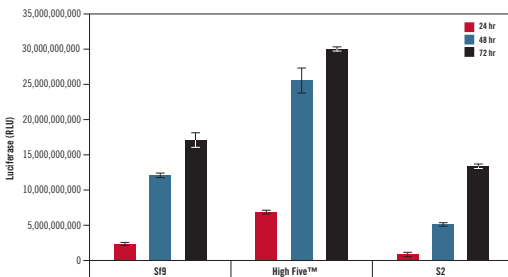


FIGURE 26. *TransIT[®]-Insect* Yields Increased Protein Expression Over Time. Insect cell lines Sf9, High Five[™] (Thermo Fisher Scientific), and *Drosophila* S2 were transfected in a 96-well plate with 0.1 µg of a luciferase expression plasmid driven by an hr5 enhancer/IE1 promoter using the *TransIT[®]-Insect* Transfection Reagent (Mirus Bio) at a reagent-to-DNA ratio of 2:1 (µl: µg). Luciferase expression was measured at three time points, 24, 48 and 72 hours post-transfection. Sf9 and High Five[™] (Thermo Fisher Scientific) cells were cultured and transfected in serum-free media formulations; S2 cells were in serum containing medium. Error bars represent the standard error of the mean for triplicate wells.

Our lab successfully tested *TransIT[®]-Insect* Transfection Reagent for generating recombinant baculovirus in insect cells. Using *TransIT[®]-Insect* with multiple BEVs we were able to generate high-titer baculovirus that resulted in consistently higher protein expression in High Five[™] and Sf9 cells compared to Cellfectin[®] II (Thermo Fisher Scientific).” (Kuo *et al*, *Protein Eng Des Sel*. Oct 2012).

Dr. Linda Lua (Director), Protein Expression Facility
The University of Queensland

CHEMICAL TRANSFECTION

CHOgro[®] EXPRESSION SYSTEM

- **Efficient**—Enables high protein titers with simple workflow
- **Convenient**—Quick adaptation to CHO cell lineages
- **Optimized**—High density growth with minimal cell clumping post transfection
- **Worry-free**—No commercial license required; animal origin free

Description

The CHOgro[®] Expression System was developed through systematic optimization of transfection protocol parameters including: cell density, transfection reagent, media formulation and culture temperature. With the CHOgro[®] Expression System, high protein titers can now be achieved in suspension CHO cells through high density transient transfection.



Complete CHOgro[®] Expression System



Polybag and Dry Powder
Optional Media Formats

Complete CHOgro[®] Expression System
(System includes: CHOgro[®] Expression Media,
TransIT-PRO[®] Transfection Reagent, CHOgro[®]
Complex Formation Solution, Poloxamer Solution and
L-Glutamine Solution)

PRODUCT NO.	QUANTITY
MIR 6260	1 Kit

Individual Components,
Available Separately

PRODUCT	PRODUCT NO.	QUANTITY
CHOgro [®] Expression Medium	MIR 6200	1 Liter

Liquid Polybag CHOgro [®] Expression Medium	MIR 6202	10 Liters
---	----------	-----------

Dry Powder CHOgro [®] Expression Medium	MIR 6201	Prepares 10 Liters
---	----------	-----------------------

TransIT-PRO [®] Transfection Reagent (Without boost; please see page 23 for kit with boost)	MIR 5740	1 ml
---	----------	------

CHOgro [®] Complex Formation Solution	MIR 6210	100 ml
--	----------	--------

Poloxamer 188 Solution	MIR 6230	100 ml
------------------------	----------	--------

L-Glutamine Solution	MIR 6240	100 ml
----------------------	----------	--------

Accessory, Sold Separately
Not Included with Kit

PRODUCT	PRODUCT NO.	QUANTITY
Human IgG1 Expression Control	MIR 6250	1 µg

To inquire about bulk pricing, please call
+1.608.441.2852



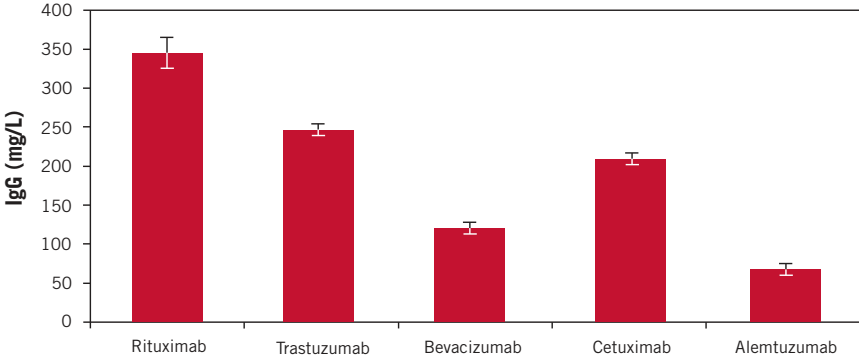


FIGURE 27. Titers of Different Antibody Vector Constructs. Five different antibody constructs were produced by transient transfection using a temperature shift to 32° C and *TransIT-PRO*® (Mirus Bio). Day 11 supernatants were clarified and analyzed using a human IgG ELISA (ZeptoMetrix). Error bars represent the standard deviation of triplicate technical replicates.

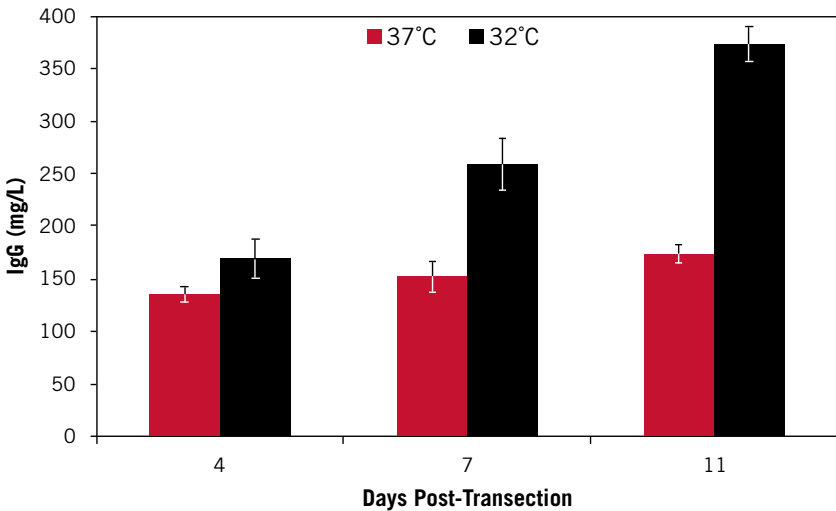


FIGURE 28. Increases in Product Titer are Observed at Longer Time Points with Mild Hypothermic Conditions. Cells were transfected at a density of 2×10^6 cells/ml in 20 ml of CHOgro® Expression Medium (Mirus Bio) in 125 ml shake flasks (Thomson). Antibody levels were analyzed from day 4, 7 and 11 clarified supernatants using a human IgG ELISA (ZeptoMetrix). All flasks were incubated at 37°C for 24 hours; at the timepoint designated, parallel flasks were switched to 32°C for the remainder of the experiment. Error bars represent the standard deviation of triplicate technical replicates.

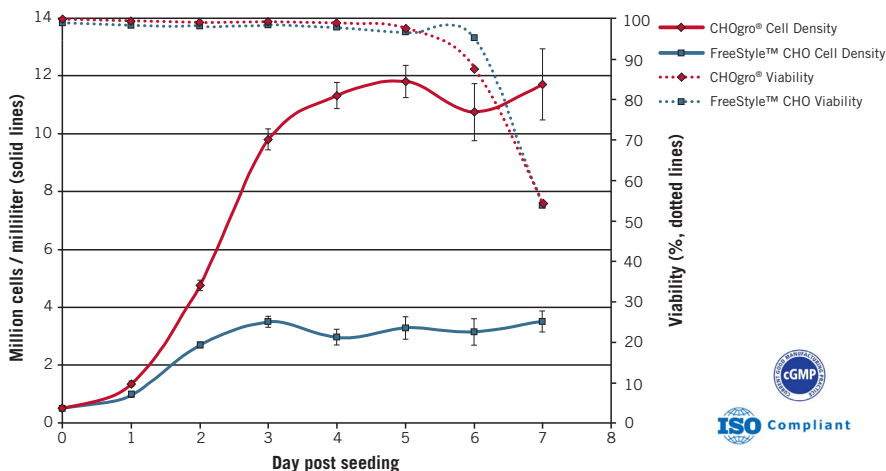


FIGURE 29. Suspension CHO Cells Grow to High Density in the CHOgro® Expression Medium. Triplicate flasks of FreeStyle™ CHO-S cells (Thermo Fisher Scientific) were seeded in CHOgro® Expression Medium (red line, Mirus Bio) or FreeStyle™ CHO Expression Medium (blue line, Thermo Fisher Scientific) at cell density of 0.5×10^6 cells/ml, 40 ml per 125 ml shake flask (Thomson). Cell counts (solid line) and viability (propidium iodide staining, dotted line) were measured daily using a Guava easyCyte™ 5HT flow cytometer (MilliporeSigma). Error bars represent the standard deviation of three readings of biological triplicates.

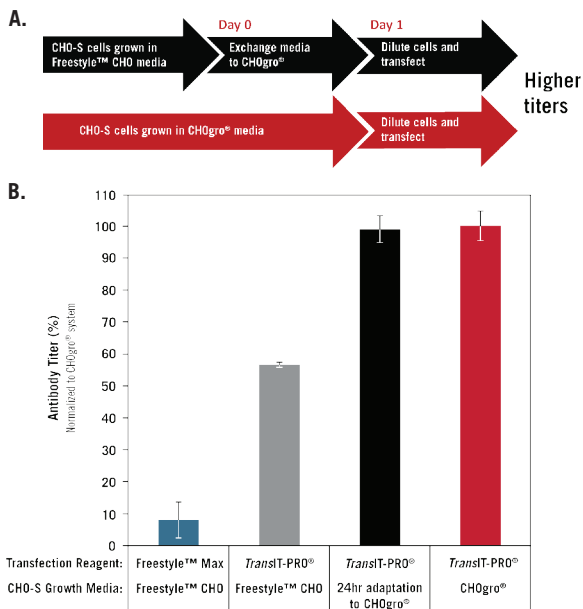


FIGURE 30. CHOgro® Media Exchange Leads to Higher Protein Production. FreeStyle™ CHO-S cells (Thermo Fisher Scientific) were cultured in FreeStyle™ CHO Expression Medium (Thermo Fisher Scientific) or CHOgro® Expression Medium (Mirus Bio). (A) Workflow schematic of media exchange of CHO-S cells from FreeStyle™ CHO Expression Medium (Thermo Fisher Scientific) to CHOgro® Expression Medium (black arrow, Mirus Bio) or the normal CHOgro® Expression System (red arrow, Mirus Bio) (B) Day 6 supernatants were clarified and analyzed using a human IgG ELISA (ZeptoMetrix). Data is normalized to the complete CHOgro® Expression System (red bar, Mirus Bio). Error bars represent the standard deviation of triplicate technical replicates.



TransIT-PRO[®] TRANSFECTION KIT

- **High Performance**—Achieve high protein yield in suspension CHO and 293 cell types
- **Easy to Use**—Compatible with multiple media formulations
- **Total Cost Savings**—Higher protein yield translates to lower material and labor costs

PRODUCT NO.	QUANTITY
MIR 5700	1 ml
MIR 5760	10 ml

To inquire about bulk pricing, please call +1.608.441.2852

We recently engineered a bispecific immunofusion for the treatment and elimination of leukemia stem cells. For this work we chose *TransIT-PRO[®]* for antibody production of CHO-S cells based on the high protein yield we obtained. (Kuo *et al.*, *Protein Eng Des Sel.* Oct 2012).

Jen-Sing Liu, Ph.D.,
Molecular Templates Inc.

Description

Decrease time to produce usable protein by maximizing target protein yields through transient transfection. The *TransIT-PRO[®]* Transfection Kit uses animal origin free components designed for high and reproducible protein yield in suspension CHO and 293 derived cells. Since it is compatible with varied media formulations, the same media can be used for both transient and stable expression. *TransIT-PRO[®]* outperforms linear PEI in protein yield, while providing a cost-effective alternative to FreeStyle[™] MAX.

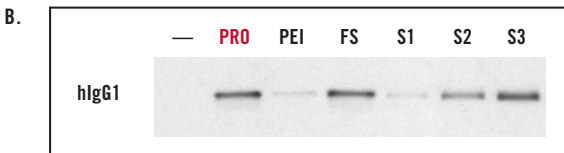
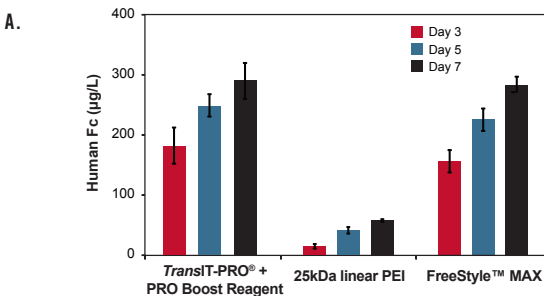


FIGURE 31. Achieve High Antibody Titers Using The *TransIT-PRO[®]* Transfection Kit in Suspension CHO Cells. IgG1 was produced by transient transfection using the *TransIT-PRO[®]* and PRO Boost Reagent (1:1:1, Mirus Bio), 25 kDa linear PEI (6:1) or FreeStyle[™] MAX (1:1, Thermo Fisher Scientific) transfection reagents according to the manufacturers' or published protocol (reagent:DNA ratio). Transfections were performed using 1 µg plasmid DNA per milliliter of culture and 0.5 x 10⁶ cells/ml at the time of transfection. FreeStyle[™] CHO-S cells (Thermo Fisher Scientific) were cultured in 20 ml of FreeStyle[™] CHO Expression medium (Thermo Fisher Scientific) in 125 ml shake flasks. (A) Day 3, 5 and 7 supernatants were clarified and analyzed using a human IgG-Fc sandwich ELISA. Error bars represent the standard deviation of triplicate technical replicates, 25kDa linear PEI is duplicate technical replicates. (B) Day 7 supernatants were clarified and analyzed by Western blot. An IgG standard was included for quantification estimate (S1= 1.6 mg/L, S2= 3.2 mg/L, S3= 6.3 mg/L).

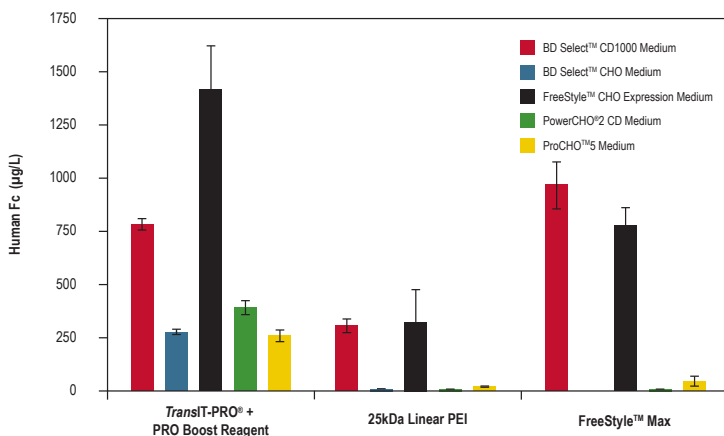


FIGURE 32. TransIT-PRO® Provides High Performance Across Varied Media Formulations. FreeStyle™ CHO-S cells were adapted to five representative growth media as noted in the graph. Cells were transfected with an IgG encoding plasmid using the TransIT-PRO® and PRO Boost Reagent (1:1:1, Mirus Bio), 25 kDa linear PEI (6:1, Polysciences), or FreeStyle™ MAX (1:1, Thermo Fisher Scientific) transfection reagents according to published protocol (reagent:DNA ratio). Transfections were performed in 24-well deep well shaker blocks using 1 µg plasmid DNA per milliliter of culture and 0.5×10^6 cells/ml at the time of transfection. Human IgG1 was quantitated from day 5 clarified supernatants and analyzed by a human anti-Fc sandwich ELISA. Error bars represent the standard deviation of triplicate wells.

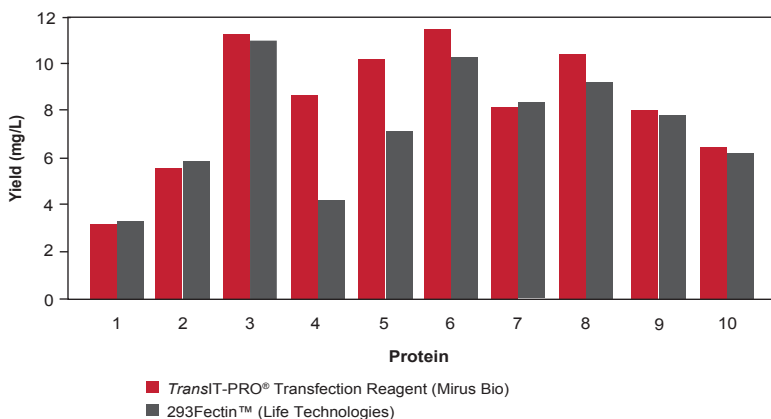


FIGURE 33. Achieve High Protein Yields Using The TransIT-PRO® Transfection Kit in Suspension 293 Cells. Ten different secreted (non-antibody) proteins were transiently expressed in FreeStyle™ 293-F cells (Thermo Fisher Scientific) using the TransIT-PRO® (1.5:1, Mirus Bio) or 293fectin™ (2:1, Thermo Fisher Scientific) transfection reagents according to manufacturers' protocol. Cells were grown in FreeStyle™ 293 Expression Medium (Thermo Fisher Scientific) and transfected at a density of 4×10^6 cells/ml. The scale of the transfection for each protein varied between 1-6 L of culture.

Data courtesy of a TransIT-PRO® pharmaceutical customer.

Plasmid DNA, RNA, siRNA and miRNA

INGENIO® ELECTROPORATION KITS & SOLUTIONS

- **High Efficiency Electroporation**—Deliver DNA or RNA to hard-to-transfect, stem and primary cells
- **Compatible with Most Conventional Electroporation Devices**—Use your existing system including Lonza-Amaya®, Bio-Rad®, or Harvard BTX®
- **Save Money and Reduce Research Costs Without Sacrificing Performance**—Ingenio® Electroporation Solution is available as a stand-alone solution or as part of a complete kit with cuvettes and cell droppers

Description

Ingenio® Electroporation Solution facilitates efficient and reliable delivery of nucleic acids to eukaryotic cells refractory to chemical transfection. Ingenio is a broad spectrum solution that supports high efficiency electroporation with minimal toxicity and replaces standard electroporation solutions including phosphate buffered saline and serum-free media. Ingenio® Kits (include solution, cuvettes and cell droppers) are compatible with multiple instruments and facilitate a wide range of applications requiring nucleic acid delivery to cells. It is also available as a stand alone solution.

“I was very depressed for the last 6 months because I was unable to transfect my rat cell line with various transfection reagents. I tried 5 Nucleofection® programs, 2 buffers and several different cell densities. But nothing worked. I am very happy to inform you, **Ingenio® is a life saver!**”

Sanal Madhusudana Girija,
Albert Einstein College of Medicine

Ingenio® Electroporation Kits for Amaya® Nucleofector® II/2b Nucleofector Devices
(solution, 0.2 cm cuvettes, cell droppers)

PRODUCT NO.	QUANTITY
MIR 50112	25 RXN
MIR 50115	50 RXN
MIR 50118	100 RXN

Ingenio® Electroporation Kits for All Other Electroporators, such as Bio-Rad® and Harvard BTX®

(solution, 0.4 cm cuvettes, cell droppers)

PRODUCT NO.	QUANTITY
MIR 50113	25 RXN
MIR 50116	50 RXN
MIR 50119	100 RXN

Ingenio® Electroporation Solution

PRODUCT NO.	QUANTITY
MIR 50111	25 RXN
MIR 50114	50 RXN
MIR 50117	100 RXN

Ingenio® Electroporation Accessories

Cuvettes

PRODUCT NO.	SIZE	QUANTITY
MIR 50120	0.2 cm	25 PK
MIR 50121	0.2 cm	50 PK
MIR 50122	0.4 cm	25 PK
MIR 50123	0.4 cm	50 PK

Cell Droppers

PRODUCT NO.	QUANTITY
MIR 50124	25 PK
MIR 50125	50 PK

To inquire about bulk pricing, please call
+1.608.441.2852

ELECTROPORATION

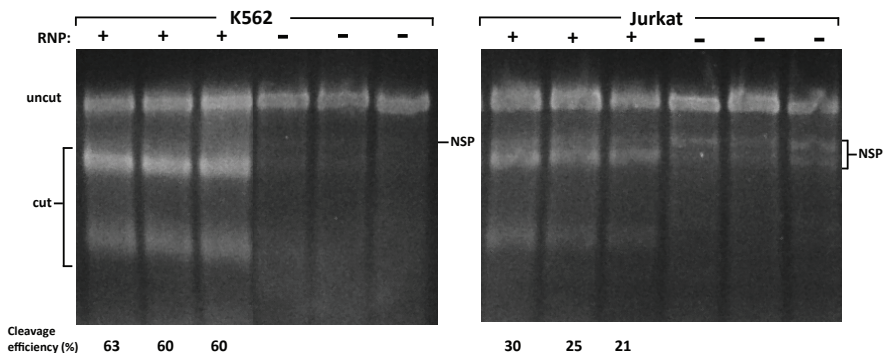
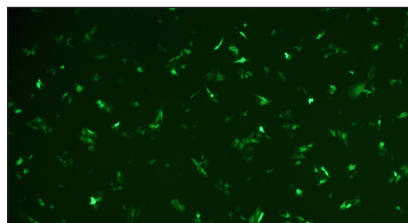


FIGURE 34. Efficient RNP Delivery with Electroporation Ingenio® Solution. K562 and Jurkat cells were electroporated with a Cas9 protein/gRNA, ribonucleoprotein (RNP) complex, comprised of 750 nM Cas9 protein (EnGen® Cas9 NLS, NEB) and 1500 nM pre-complexed two-part gRNA (IDT) targeting PPIB using the Ingenio® Electroporation Solution (Mirus Bio) and a Gene Pulser® Xcell™ Eukaryotic System (Bio-Rad Laboratories, Inc.). Exponential pulse conditions of 130V, 950 μ F for K562 and 150V, 950 μ F for Jurkat cells were applied to triplicate 0.2 cm cuvettes, 100 μ l volume, 10×10^6 cells/ml +/- RNP complex. A T7E1 mismatch assay was used to measure cleavage efficiency at 48 hours post-transfection. Non-specific bands (NSP) were observed in the negative control of both cell lines. Cleavage efficiency was calculated based on the ratio of cleaved band intensities to the sum of cleaved and uncleaved band intensities minus the average signal of the non-specific band(s) in negative control lanes.

A.



B.

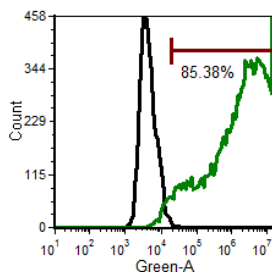


FIGURE 35. High Efficiency Plasmid DNA Electroporation of Human Induced Pluripotent Stem (iPS) Cells using Ingenio®. The Ingenio® Electroporation Kit (Mirus Bio) was used to transfect 2×10^6 iPS cells on the Amaxa® Nucleofector® II/2b Device (Lonza Group Ltd). Cells were electroporated with 8 μ g ZsGreen expressing plasmid (Clontech) in 100 μ l and plated in 6-well plates at 0.33×10^6 cells/well. Cells were visualized 24 hours post-transfection and imaged under 4X objective with an Olympus IX71® Inverted Microscope (Olympus Corporation). Image is (A) green fluorescence. Cells were also assayed 24 hours post-transfection on an Accuri® Cytometer (Becton Dickinson and Company). The histogram (B) shows unelectroporated cells (black line) compared to cells electroporated with plasmid using the Ingenio® Electroporation Kit (green line, Mirus Bio).

Data courtesy of Cellular Dynamics International.



Ingenio® Electroporation Kits and Solutions *continued*

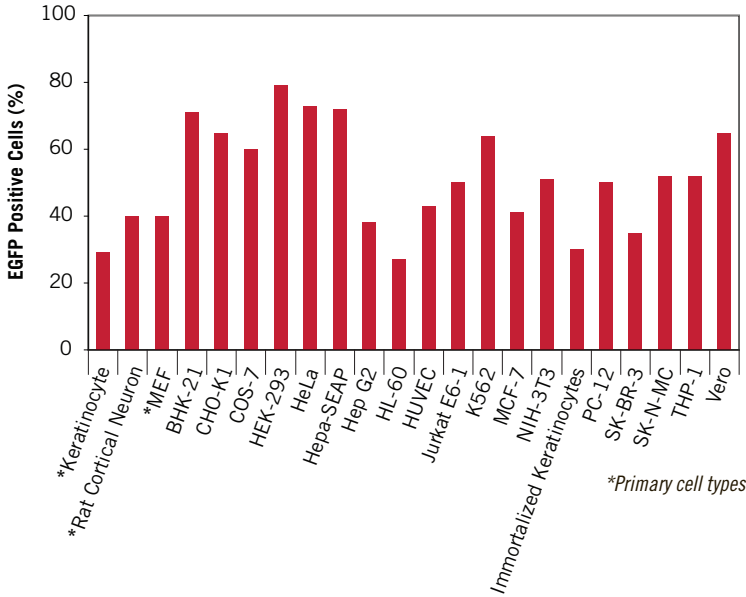


FIGURE 36. The Ingenio® Electroporation Kits are Ideal for Electroporation in Many Cell Types Using the Amaxa® Nucleofector® II/2b Device. Cells were assayed at 24 hours post-electroporation by flow cytometry and reported as percentage of live cell population. Visit www.mirusbio.com/applications/electroporation for ideal pulse conditions.

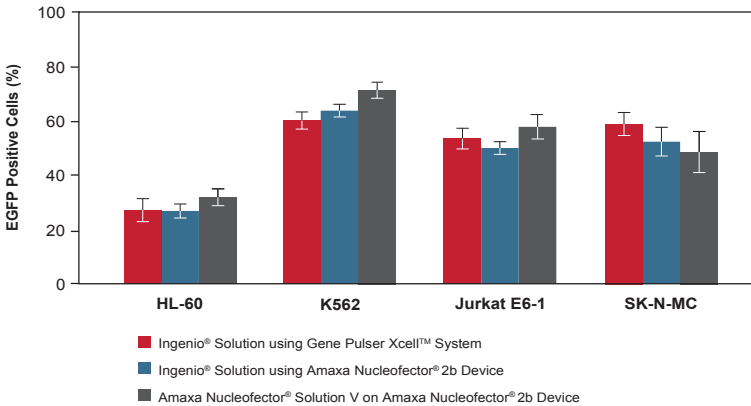


FIGURE 37. The Ingenio® Solution Provides Comparable Efficiency on the Amaxa® Nucleofector® II/2b Device. Cells were electroporated in parallel with an EGFP reporter vector. Two electroporators were used with different electroporation kits: the Ingenio® Electroporation Kit (Mirus Bio) was used in the Gene Pulser Xcell™ Eukaryotic System (Bio-Rad Laboratories, Inc.) and the Amaxa® Nucleofector® II/2b Device (Lonza Group Ltd); the Amaxa® Nucleofector® Kit V (Lonza Group Ltd) was used in the Amaxa® Nucleofector® II/2b Device (Lonza Group Ltd), all according to manufacturers' recommendations. EGFP expressing cells were identified 24 hours post-electroporation by flow cytometry and presented as a percentage of the live cell population. Experiments were performed in triplicate on three separate days and the data averaged.

ELECTROPORATION

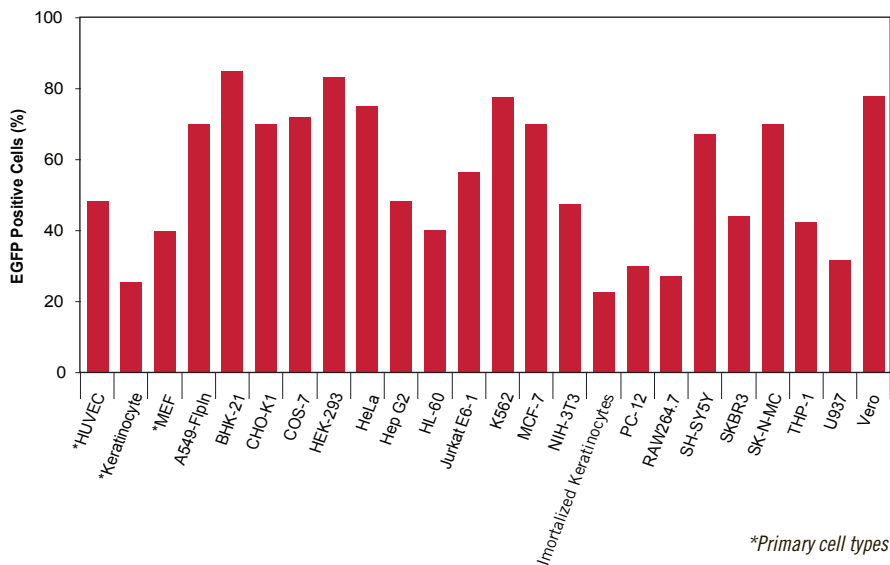


FIGURE 38. The Ingenio® Electroporation Kits are Ideal for Electroporation in Many Cell Types Using the Bio-Rad® GenePulser Xcell™ System. EGFP expressing cells were identified 24 hours post-electroporation by flow cytometry and presented as a percentage of the live cell population. Visit www.mirusbio.com/applications/electroporation for ideal pulse conditions.

ELECTROPORATION

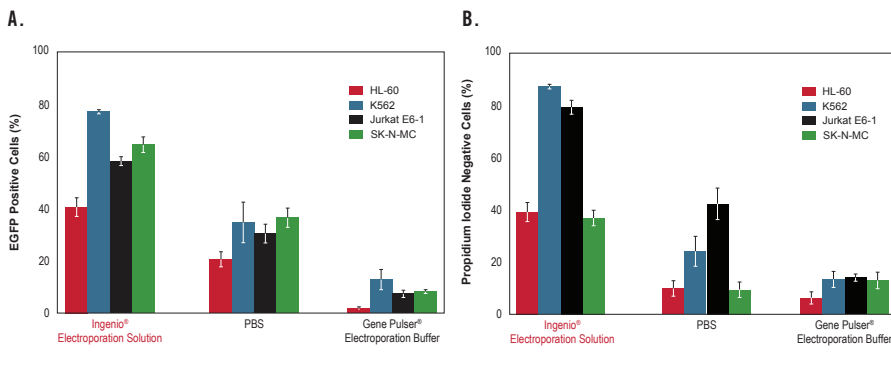


FIGURE 39. Ingenio® Kits Outperforms Other Electroporation Solutions in Efficiency and Viability. Cells were electroporated in parallel with an EGFP reporter vector using either Ingenio® Electroporation Solution (Mirus Bio), PBS or GenePulser® Electroporation Buffer (Bio-Rad Laboratories, Inc.) on the GenePulser Xcell™ Eukaryotic System (Bio-Rad Laboratories, Inc.). (A) EGFP expressing cells were identified 24 hours post-electroporation by flow cytometry and presented as a percentage of the live cell population. (B) Cells were assayed for viability by propidium iodide staining and flow cytometry analysis. Error bars represent the standard deviation of triplicate wells.

Ideal for Recombinant Lentivirus Production

TransIT[®]-LENTI TRANSFECTION REAGENT

- **High Performance**—Provide up to eight-fold higher functional titers
- **Simple Protocol**—No media change required, single harvest
- **Animal Origin Free**—Regulatory friendly

Description

The *TransIT*[®]-Lenti Transfection Reagent is designed to enhance delivery of packaging and transfer vectors to adherent HEK 293T cell types and increase recombinant lentivirus production. The *TransducelT*[™] Transduction Reagent enhances recombinant lentivirus infection of target cells.

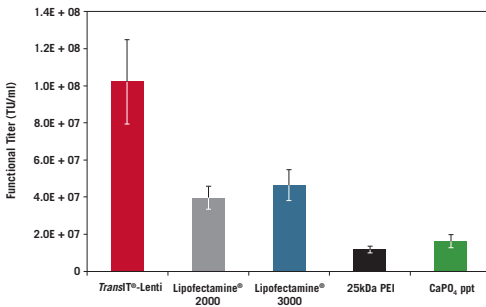


FIGURE 40. High Functional Titers With The *TransIT*[®]-Lenti Transfection Reagent. Adherent 293T/17 cells were transfected in a 6-well plate with pLKO.1-puro-CMV-TurboGFP[™] transfer vector (Sigma-Aldrich, Inc. LLC) and the Lentivirus Packaging Mix Powered by MISSION[®] (1:1 ratio, 2 µg/well) with the following reagents: *TransIT*[®]-Lenti (3:1, vol:wt; Mirus Bio), Lipofectamine[®] 2000 (3:1; Thermo Fisher Scientific), Lipofectamine[®] 3000 (3:1:1; Thermo Fisher Scientific), 25 kDa PEI (6:1), or CaPO₄ precipitation (4 µg pDNA/well). The supernatant was harvested, filtered (0.45 µm), and titered using 293T/17 cells. Lentivirus transductions were performed in the presence of 8 µg/ml *TransducelT*[™] (Mirus Bio) and GFP expression was measured 72 hours post-transduction using guava[®] easyCyte[™] 5HT Flow Cytometer (MilliporeSigma). Error bars represent triplicate transfection complexes titered individually. Functional titers were calculated using virus dilutions with less than 20% GFP positive cells.

PRODUCT NO.	QUANTITY
MIR 6603	0.3 ml
MIR 6604	0.75 ml
MIR 6600	1.5 ml
MIR 6605	5 x 1.5 ml
MIR 6606	10 x 1.5 ml

TransducelT[™] Transduction Reagent

PRODUCT NO.	QUANTITY
MIR 6620	1 ml

NEW *TransIT*[®] Lentivirus System

(System includes: *TransIT*[®]-Lenti Transfection Reagent, *TransducelT*[™] Transduction Reagent, Lentivirus Packaging Mix Powered by MISSION[®])

PRODUCT NO.	QUANTITY
MIR 6650	5 RXN
MIR 6655	34 RXN

NEW Lentivirus Packaging Mix Powered by MISSION[®]

PRODUCT NO.	QUANTITY
MIR 6630	5 RXN
MIR 6640	34 RXN

To inquire about bulk pricing, please call +1.608.441.2852

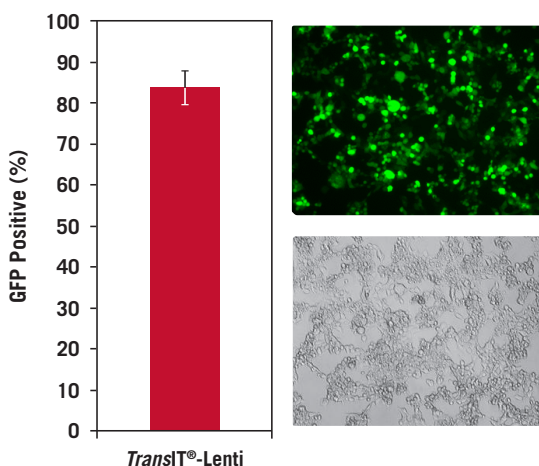


FIGURE 41. High Efficiency Transfection With the TransIT[®]-Lenti Transfection Reagent. Adherent 293T/17 cells were transfected in a 6-well plate format using MISSION[®] pLKO.1-puro-CMV-TurboGFP™ transfer vector and Lentivirus Packaging Mix Powered by MISSION[®] (Sigma-Aldrich, Inc. LLC) using the TransIT[®]-Lenti Transfection Reagent (3:1, vol:wt; Mirus Bio). GFP efficiency was measured at 48 hours post-transfection. Error bars represent five transfection complexes. Images were captured at 48 hours post-transfection. The observed cell rounding and cell-cell fusion is due to high expression of the vesicular stomatitis virus G protein (VSV-G) for pseudotyping the recombinant lentivirus.

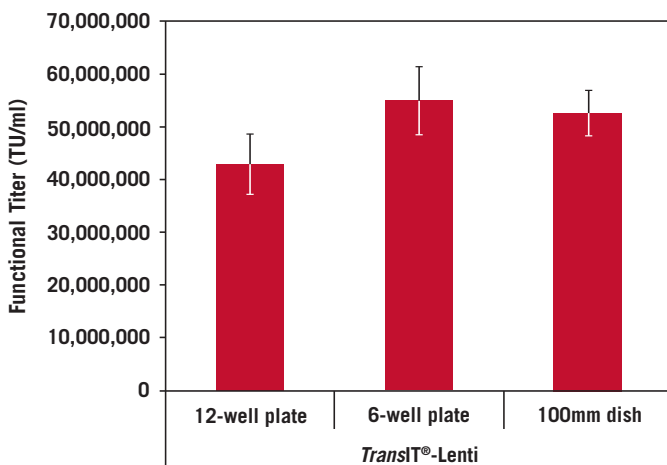


FIGURE 42. Lentivirus Production is Scalable. Adherent 293T/17 cells were transfected in a 12-well, 6-well or 100 mm plate format using the MISSION[®] vectors (pLKO.1-puro-CMV-TurboGFP™ transfer vector and the Lentivirus Packaging Mix Powered by MISSION[®] at a 1:1 ratio; Sigma-Aldrich, Inc. LLC) and the TransIT[®]-Lenti Transfection Reagent (3:1, vol:wt; Mirus Bio). The supernatant was harvested, filtered (0.45 µm), and titered using 293T/17 cells. Lentivirus transductions were performed in the presence of 8 µg/ml TransducelT™ (Mirus Bio) and GFP expression was measured 72 hours post-transduction. Error bars represent triplicate transfection complexes titered individually. Functional titers were calculated using virus dilutions with less than 20% GFP positive cells



TransIT[®]-Lenti Transfection Reagent continued

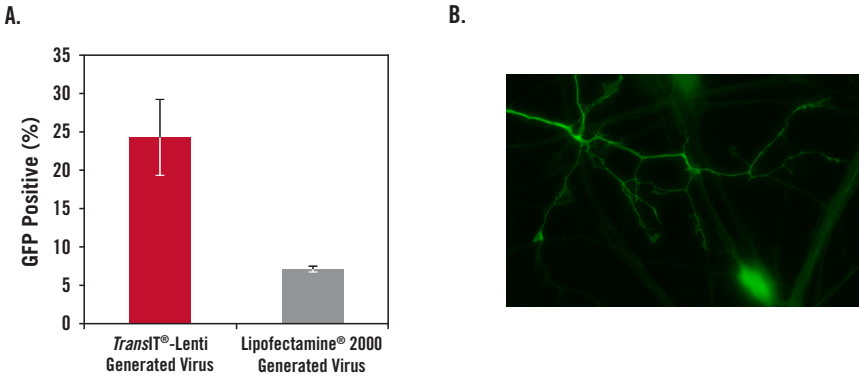


FIGURE 43. High Transduction Efficiency with Unconcentrated Lentivirus Using *TransIT[®]-Lenti*. (A) Lentivirus was produced with the *TransIT[®]-Lenti* Transfection Reagent (3:1, vol:wt; Mirus Bio) or Lipofectamine[®] 2000 (Thermo Fisher Scientific) using the MISSION[®] vectors (pLKO.1-puro-CMV-TurboGFP[™] transfer vector and the Lentivirus Packaging Mix Powered by MISSION[®], Sigma-Aldrich, Inc. LLC). The supernatant was harvested, filtered (0.45 μ m), and frozen. Lentivirus transductions were performed 5 days post-plating with iCell[®] Motor Neurons (Cellular Dynamics International (CDI, a FUJIFILM Company)). For both *TransIT[®]-Lenti* (Mirus Bio) and Lipofectamine[®] 2000 (Thermo Fisher Scientific), one microliter of unconcentrated supernatant was added per well of a 96-well plate. GFP efficiency was measured 72 hours post-transduction using guava[®] easyCyte[™] 5HT Flow Cytometer (MilliporeSigma). Error bars represent the SEM of duplicate wells. (B) iCell[®] Motor Neurons (Cellular Dynamics International (CDI, a FUJIFILM Company)) were plated in 35mm dishes (Ibidi) and transduced with lentivirus produced using the *TransIT[®]-Lenti* Transfection Reagent (Mirus Bio) and MISSION[®] vectors (Sigma-Aldrich, Inc. LLC). Images were captured at 72 hours post-transduction with a Zeiss Axiovert S100 inverted fluorescence microscope using a 63X objective under oil.

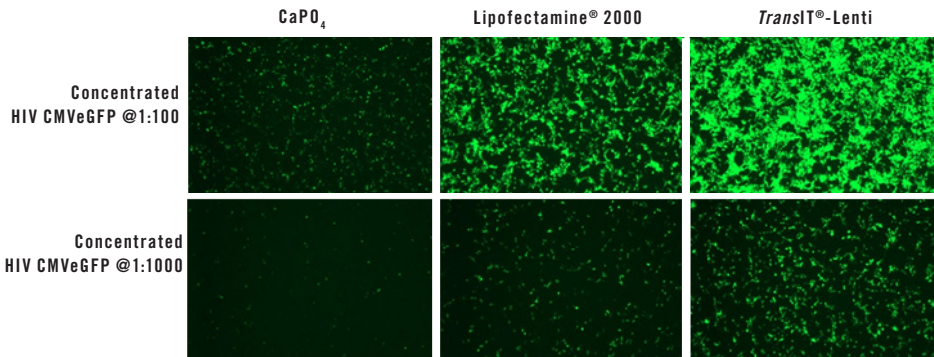


FIGURE 44. Comparing Functionality of CaPO₄, Lipofectamine[®] 2000 or *TransIT[®]-Lenti* Generated Lentivirus. HIV CMVeGFP virus was produced in HEK 293FT cells using either CaPO₄, Lipofectamine[®] 2000 (Thermo Fisher Scientific) or *TransIT[®]-Lenti* Transfection Reagent (Mirus Bio) per manufacturers' protocol. Lentivirus was collected 48 hours post-transfection and concentrated by ultracentrifugation. HEK 293FT cells were infected with a 1:100 or 1:1000 dilution of each concentrated lentivirus. Images (above) were captured 48 hours post-transduction.

Data courtesy of Jeremy Coffin, University of Iowa Viral Vector Core.

NEW **TransIT-VirusGEN[®]** TRANSFECTION REAGENT

- **Reliable**—Consistent high titer virus production
- **Scalable**—Efficient across different formats
- **Flexible**—Address different virus and cell culture systems

Description

TransIT-VirusGEN[®] Transfection Reagent is designed to enhance delivery of packaging and transfer vectors to adherent and suspension HEK 293 cell types to increase recombinant adeno-associated virus (AAV) and lentivirus production.

PRODUCT NO.	QUANTITY
MIR 6703	0.3 ml
MIR 6704	0.75 ml
MIR 6700	1.5 ml
MIR 6705	5 x 1.5 ml
MIR 6706	10 x 1.5 ml

To inquire about bulk pricing, please call +1.608.441.2852

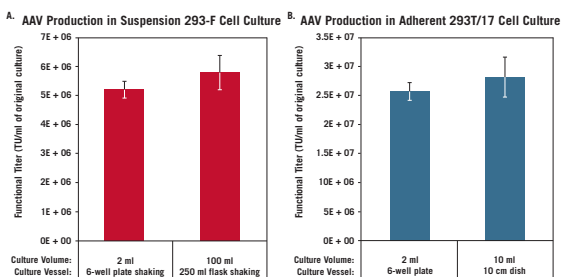


FIGURE 45. *TransIT-VirusGEN[®]* Enables Broad Scalability (AAV). Suspension FreeStyle™ 293-F cells grown in FreeStyle™ F17 Medium (A) or adherent 293T/17 cells (B) were transfected with pAAV-hrGFP, pAAV-RC, and pAAV-Helper (1:1:1 ratio, 1.5 total µg/ml, Agilent Technologies) using the *TransIT-VirusGEN[®]* Transfection Reagent (2:1 reagent-to-DNA ratio (vol:wt), Mirus) at the indicated volumes per culture vessel. For experimental details, please visit www.mirusbio.com/virusgen

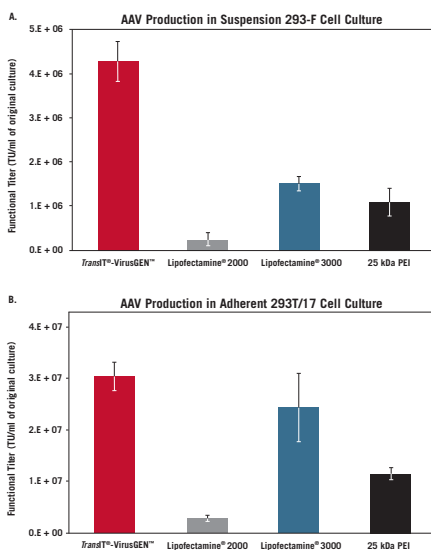


FIGURE 46. *TransIT-VirusGEN[®]* Outperforms Competitor Reagents in Suspension and Adherent AAV Cell Cultures. For experimental details, please visit www.mirusbio.com/virusgen

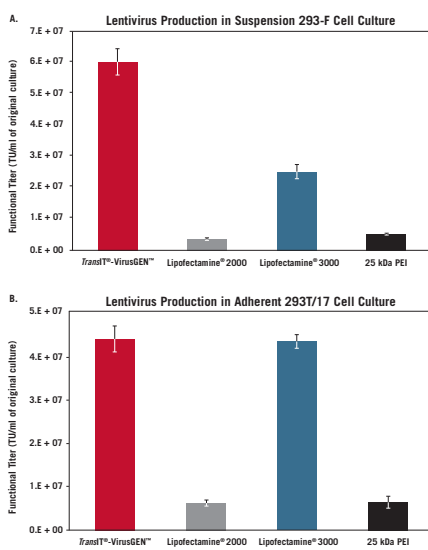


FIGURE 47. *TransIT-VirusGEN[®]* Outperforms Competitor Reagents in Suspension and Adherent Lentivirus Cell Cultures. For experimental details, please visit www.mirusbio.com/virusgen



Terms and Conditions

1. Governing Provisions: All Mirus Bio LLC products are sold and shipped subject to these Terms and Conditions, unless modified by a quotation issued by Mirus Bio LLC or an agreement signed by both Mirus Bio LLC and the customer. These Terms and Conditions supersede any other written document or oral discussion including terms or conditions appearing on a purchase order issued by the customer.

2. Product Safety: Mirus Bio LLC manufactures products for research use by qualified individuals. These products may contain chemicals that may be harmful if misused. Customers are responsible for reviewing and following the instructions included in the product protocols and SDS that accompany the product. Please contact techsupport@mirusbio.com with any questions regarding the safe use of Mirus Bio LLC products. We recommend our products be used in accordance with the NIH guidelines developed for genetic research.

3. Warranties: Mirus Bio LLC products are warranted to meet or exceed the stated specifications for the usable life of the product defined as either the expiration date for the product or six months from the date of receipt for those products not carrying an expiration date. This warranty is void if the customer has altered or misused the product or failed to store the product as recommended. The warranty does not include defects or failures associated with materials supplied to Mirus Bio LLC by the customer. Mirus Bio LLC disclaims any and all responsibility for any injury or damage which may be caused by the failure of the buyer or any other person to use these products in accordance with the conditions outlined herein. Mirus Bio's sole obligation and the customer's sole remedy are limited to free replacement of products that fail to meet our minimum performance specifications. **THIS WARRANTY IS EXCLUSIVE. MIRUS BIO LLC SPECIFICALLY DISCLAIMS ANY OTHER WARRANTIES OF ANY KIND OR NATURE, DIRECT OR INDIRECT, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THE SUITABILITY, FITNESS OR MERCHANTABILITY FOR ANY PURPOSE. MIRUS BIO WILL NOT BE LIABLE FOR ANY CLAIMS OR DAMAGES UNDER ANY LEGAL THEORY INCLUDING, BUT NOT LIMITED TO CONTRACT, NEGLIGENCE, STRICT LIABILITY OR TORT IN CONNECTION WITH THE FAILURE OF MIRUS BIO LLC PRODUCTS TO PERFORM IN ACCORDANCE WITH THE STATED SPECIFICATIONS.** Mirus Bio LLC is not liable for any loss, damages or penalties resulting from delays in manufacturing or delivery of products or services. This warranty applies to all products and services offered by Mirus Bio LLC including catalog products, bulk products, custom products and custom services. Unless otherwise agreed, all technical assistance and information is provided free of charge and we make no warranty regarding the accuracy or utility of such information or assistance.

4. Patents: Mirus Bio's products and processes are covered by one or more patents and are subject to other trade secret and proprietary rights. No transfer or grant of rights under any patent or patents is made or is to be implied by any provision under these Terms and Conditions other than a limited license to use the products for research only. You agree not to infringe upon such rights or to attempt to reverse engineer, reconstruct, synthesize or otherwise modify Mirus Bio products. Certain applications of Mirus Bio products may require licenses from other parties. Determining the existence and scope of such third party intellectual property is the responsibility of the customer. Purchase of the product provides the customer with a limited non-transferable license under any Mirus Bio patents or patent applications to use the product for internal research unless there is a written limitation to this license in the product literature. The customer is responsible for carefully reviewing the product literature and respecting any limitations to this license, e.g. limitations for commercial use or research by for-profit institutions.

5. Customer agrees to indemnify and hold Mirus Bio LLC harmless from and against any and all claims, losses, damages, costs and expenses (including reasonable attorneys' fees and amounts paid in

settlement in good faith) which may be suffered or incurred by Mirus Bio LLC (including, without limitation, as a result of any claim or action by a third party) arising in any manner from Customer's use of any Products sold from this Web site or otherwise arising out of any act or omission of Customer, its employees, agents or representatives, or by reason of breach of or failure to perform any of Customer's obligations hereunder.

6. Orders, Shipment and Delivery: Purchase orders placed before 4:00 pm Central Time will be shipped that day. Orders placed on Friday will ship on the following Monday for delivery on Tuesday. Orders for regularly stocked items may only be cancelled prior to shipment of the order. Shipping charges are prepaid and added to the customer's invoice. Orders are shipped by Federal Express. Unless agreed upon in writing, all shipments are free carrier (FCA) our facility in Madison, Wisconsin. Costs for transportation and risk of loss transfer to the buyer upon delivery to the carrier. The customer is responsible for any tariffs, duties or taxes associated with international shipments.

7. Copyright and Trademarks: All content contained in printed materials or on the Mirus Bio LLC website is the copyright of Mirus Bio LLC unless specifically identified otherwise. Trademarks referenced herein are either registered trademarks of Mirus Bio LLC or third party trademarks, which are the property of their respective owners. All rights are reserved. Please contact sales@mirusbio.com to request permission to use copyrighted material or trademarks of Mirus Bio LLC.

8. Payment Terms: All sales are net 30 days of invoice in U.S. dollars unless other terms are agreed to in writing by Mirus Bio LLC. Prices are subject to change without notice. Mirus Bio LLC accepts the following credit cards: VISA, MasterCard, American Express and Discover. Mail payments to:

Mirus Bio LLC
545 Science Drive
Madison, WI 53711 USA
Attention: Accounts Payable
Fax: 608.441.2849

9. Returns: Mirus Bio LLC must authorize all product returns. Customers wishing to return a product should contact us at techsupport@mirusbio.com. Product that we confirm damaged, incomplete or do not meet our minimum written specifications will be replaced per our warranty (see above) providing such notice is received from the original purchaser within 30 days of receipt of the product. Customers may contact Mirus Bio LLC to cancel an order after shipment or return a product that meets our minimum written specifications. Mirus Bio LLC must authorize these returns. Products must be unopened and returned in their original, intact condition. The customer must bear the cost of shipping the product back to Mirus Bio LLC under the conditions specified by Mirus Bio LLC. All such returns will be subject to a 25% restocking fee.

10. These Terms and Conditions constitute the entire agreement between Mirus Bio LLC and Customer with respect to Customer use of the Web site and Customer purchase of products hereunder, except as the foregoing (i) may be amended from time to time by Mirus Bio LLC, or (ii) as related to Customer purchase of products, may be superseded by any express conflicting terms or supplemented by any express additional terms in a separate written contract signed by authorized representatives of Mirus Bio LLC and Customer.

Trademarks

©1996-2018. All rights reserved. Mirus Bio LLC. CHOGro, Ingenio, *LabelIT*, MiraCLEAN, Mirus Bio, μ Array, pLIVE, Transfectopedia, *TransIT*, *TransIT-CRISPR*, *TransIT-HeLaMONSTER*, *TransIT-PRO*, *TransIT-siQUEST*, *TransIT-TKO*, *TransIT-X2* and VirusGEN are registered trademarks of Mirus Bio LLC. Tracker and *TransducelT* are trademarks of Mirus Bio LLC. Reagent Agent is a service mark of Mirus Bio LLC.

Other Trademarks

ProGreen is a trademark of AB Vector LLC; Accuri and BD Select are registered trademarks of Becton, Dickinson and Company; Bio-Rad and GenePulser are registered trademarks and Xcell is a trademark of Bio-Rad Laboratories, Inc.; iCell is a registered trademark of Cellular Dynamics International (CDI), a FUJIFILM Company; Multiplicator is a registered trademark of Eppendorf AG; FuGENE is a registered trademark of Fugent LLC; BTX is a registered trademark of Harvard Apparatus; Lonza-Amixa, Nucleofector and PowerCHO are registered trademarks of Lonza Group Ltd; easyCyte and Guava are registered trademarks of MilliporeSigma; EnGen is a registered trademark of New England Biolabs; Olympus IX71 is a registered trademark of Olympus Corporation; EX-CELL and MISSION are registered trademarks and ESCORT and pLKO.1-puro-CMV-TurboGFP are trademarks of Sigma-Aldrich, Inc., LLC; PolyJet is a trademark of SigmaGen Laboratories; Stemlect is a trademark of Stemgent, Inc.; Alexa Fluor, Cellfectin, Lipofectamine and Opti-MEM are registered trademarks and 293Fectin, Expi293, Expi293F, Freestyle, High Five, mirVana and PLUS are trademarks of Thermo Fisher Scientific.

Registered names, trademarks, etc. used in the Mirus Bio website, even when not specifically marked as such, are not to be considered unprotected by law.

External links on this web site are provided only for the convenience of Mirus Bio web site visitors. Mirus Bio has no interest in, responsibility for, or control over non-Mirus Bio affiliated linked sites. Mirus Bio makes no promises or warranties of any kind, express or implied, including those of merchantability and fitness for a particular purpose, as to content of linked sites. In no event shall Mirus Bio be liable for any damages resulting from use of these links even if Mirus Bio has been informed of the possibility of such liability.

Patent and Licensing Information

NOTICE TO PURCHASER: LIMITED LICENSE

Use of Mirus Bio *TransIT*[®] polyamine transfection reagents are covered by U.S. Patent No. 7,101,995, No. 7,601,367, No. 8,921,448, No. 9,290,779 and patents pending. Mirus Bio *LabelIT*[®] nucleic acid labeling and modifying reagents are covered by U.S. Patent No. 6,262,252, No. 6,593,465, No. 7,049,142, No. 7,326,780 and No. 7,491,538. This product is sold to the Buyer with a limited license for Research Use Only and is not for clinical, therapeutic or diagnostic use in humans or animals. This product, or parts from this product, may not be re-packaged or re-sold without written permission from Mirus Bio LLC. The Buyer agrees not to infringe upon Mirus Bio patents or to attempt to reverse engineer, reconstruct, synthesize or otherwise modify Mirus Bio products.

Use of certain *TransIT*[®] transfection reagents may be covered by one or more of U.S. patents No. 7,250,479, No. 7,662,986, No. 7,666,962, and No. 7,714,075 and corresponding claims outside of the U.S. This product is sold to the Buyer with a limited license for the sole purpose of the Buyer using the product as an in vitro transfection reagent. This product must not be used in vivo (whether for therapeutic, diagnostic or clinical use) in humans or animals. This product (or any part) must not be re-packaged or resold or otherwise transferred to any third party without the written permission of Mirus Bio. The Buyer agrees not to infringe upon Mirus Bio's patents or to attempt to reverse engineer, reconstruct, synthesize or otherwise modify this product. A license from Mirus Bio may be required for commercial application of this product, or any use other than in accordance with the foregoing.

For commercial use of flashBAC[™] or pOET products, please contact Oxford Expression Technologies, Ltd.

For further information, contact Mirus Bio LLC, 545 Science Drive, Madison WI 53711. Email license@mirusbio.com.

PRODUCT LIST

CHEMICAL TRANSFECTION

Transfection Into Any Cell Type With Any Nucleic Acid

Product	Product No.	Quantity
<i>TransIT</i> [®] -X2 [®]	MIR 6003	0.3 ml
Dynamic Delivery System	MIR 6004	0.75 ml
	MIR 6000	1.5 ml
	MIR 6005	5 x 1.5 ml
	MIR 6006	10 x 1.5 ml

Plasmid DNA Transfection

Product	Product No.	Quantity
<i>TransIT</i> [®] -2020 Transfection Reagent	MIR 5404	0.4 ml
	MIR 5400	1 ml
	MIR 5405	5 x 1 ml
	MIR 5406	10 x 1 ml
	MIR 2304	0.4 ml
<i>TransIT</i> [®] -LT1 Transfection Reagent	MIR 2300	1 ml
	MIR 2305	5 x 1 ml
	MIR 2306	10 x 1 ml

Cell Line Specific

Product	Product No.	Quantity
<i>TransIT</i> [®] -293 Transfection Reagent	MIR 2704	0.4 ml
	MIR 2700	1 ml
	MIR 2705	5 x 1 ml
	MIR 2706	10 x 1 ml
	MIR 5504	0.4 ml
	MIR 5505	5 x 1 ml
<i>TransIT</i> [®] -BrCa Transfection Reagent	MIR 5500	1 ml
	MIR 5506	10 x 1 ml
	MIR 2174	0.4 ml
	MIR 2170	1 ml
<i>TransIT</i> [®] -CHO Transfection Kit*	MIR 2175	5 x 1 ml
	MIR 2176	10 x 1 ml
	MIR 2904	0.4 ml
	MIR 2900	1 ml
<i>TransIT</i> -HeLaMONSTER [®] Transfection Kit*	MIR 2905	5 x 1 ml
	MIR 2906	10 x 1 ml

Large Scale Protein Production in Suspension CHO Cells

Complete System	Product No.	Quantity
CHOgro [®] Expression System	MIR 6260	10 ml

CHOgro [®] Components	Product No.	Quantity
CHOgro [®] Expression Medium	MIR 6200	1 Liter
CHOgro [®] Liquid Polybag Format	MIR 6202	10 Liters
CHOgro [®] Dry Powder Format	MIR 6201	Prepares 10L
<i>TransIT</i> -PRO [®]	MIR 5740	1 ml
Transfection Reagent	MIR 5750	10 ml
CHOgro [®] Complex Formation Solution	MIR 6210	100 ml

Product	Product No.	Quantity
<i>TransIT</i> [®] -Jurkat Transfection Reagent	MIR 2124	0.4 ml
	MIR 2120	1 ml
	MIR 2125	5 x 1 ml
	MIR 2126	10 x 1 ml
<i>TransIT</i> [®] -Keratinocyte Transfection Reagent	MIR 2804	0.4 ml
	MIR 2800	1 ml
	MIR 2805	5 x 1 ml
	MIR 2806	10 x 1 ml

Insect Cell Transfection & Baculovirus Production

Product	Product No.	Quantity
<i>TransIT</i> [®] -Insect Transfection Reagent	MIR 6104	0.4 ml
	MIR 6100	1 ml
	MIR 6105	5 x 1 ml
	MIR 6106	10 x 1 ml

siRNA/miRNA

Product	Product No.	Quantity
<i>TransIT</i> -TKO [®] Transfection Reagent	MIR 2154	0.4 ml
	MIR 2150	1.5 ml
	MIR 2155	5 x 1.5 ml
	MIR 2156	10 x 1.5 ml
<i>TransIT</i> -siQUEST [®] Transfection Reagent	MIR 2114	0.4 ml
	MIR 2110	1.5 ml
	MIR 2115	5 x 1.5 ml
	MIR 2116	10 x 1.5 ml

Large RNA (Viral and mRNA)

Product	Product No.	Quantity
<i>TransIT</i> [®] -mRNA Transfection Kit*	MIR 2225	0.4 ml
	MIR 2250	1 ml
	MIR 2255	5 x 1 ml
	MIR 2256	10 x 1 ml

CHOgro [®] Components	Product No.	Quantity
Poloxamer 188 Solution	MIR 6230	100 ml
L-Glutamine Solution	MIR 6240	100 ml

Accessory, Sold Separately	Product No.	Quantity
Human IgG1 Expression Control	MIR 6250	1 µg

Large Scale Protein Production in Suspension CHO & HEK293 Cells

Product	Product No.	Quantity
<i>TransIT</i> -PRO [®] Transfection Kit*	MIR 5700	1 ml
	MIR 5760	10 ml

ELECTROPORATION

Product	Product No.	Size
Ingenio [®] Electroporation Kits (solution, 0.4 cm cuvettes, cell droppers)	MIR 50113	25 RXN
	MIR 50116	50 RXN
	MIR 50119	100 RXN
	MIR 50112	25 RXN
Ingenio [®] Electroporation Kits (solution, 0.2 cm cuvettes, cell droppers)	MIR 50115	50 RXN
	MIR 50118	100 RXN

Product	Product No.	Size
Ingenio [®] Electroporation Solution	MIR 50111	25 RXN (6.25 ml)
	MIR 50114	50 RXN (12.5 ml)
	MIR 50117	100 RXN (25 ml)
Ingenio [®] Electroporation Accessories	MIR 50120	0.2 cm cuvettes (25PK)
	MIR 50121	0.2 cm cuvettes (50PK)
	MIR 50122	0.4 cm cuvettes (25PK)
	MIR 50123	0.4 cm cuvettes (50PK)
	MIR 50124	Cell Droppers (25 PK)
	MIR 50125	Cell Droppers (50 PK)

VIRUS PRODUCTION

Product	Product No.	Quantity
<i>TransIT</i> [®] -Lenti Transfection Reagent	MIR 6603	0.3 ml
	MIR 6604	0.75 ml
	MIR 6600	1.5 ml
	MIR 6605	5 x 1.5 ml
	MIR 6606	10 x 1.5 ml

<i>TransduceIT</i> TM Transduction Reagent	Product No.	Quantity
MIR 6620	1 ml	

NEW <i>TransIT</i> [®] -Lenti Packaging System	MIR 6650	5 RXN
	MIR 6655	34 RXN

NEW Lentivirus Packaging Mix Powered by MISSION [®]	MIR 6630	5 RXN
	MIR 6640	34 RXN

Product	Product No.	Quantity
NEW <i>TransIT</i> -VirusGEN [®] Transfection Reagent	MIR 6703	0.3 ml
	MIR 6704	0.75 ml
	MIR 6700	1.5 ml
	MIR 6705	5 x 1.5 ml
	MIR 6706	10 x 1.5 ml

**TransIT* Transfection Kits supplied with a transfection and boost reagent.

To inquire about bulk pricing, please call +1.608.441.2852

Lit. No. 0118100