

The nucleic acids delivery specialists design our transfection reagents. Our formulations provide superior transfection efficiency and cell viability. This complete range includes TransIT reagents, based on a histone and unique polyamine technology. It covers transfection in cell lines with broad spectrum (LT1) (including adherent cell lines and primary cells.), as well as cell line-optimized reagents for applications requiring optimal transfection efficiencies. Specialized kits are designed to transfect particular types of nucleic acid : siRNA, RNA and oligo. To control the efficiency of transfection, our tracking kits will allow localization of functional nucleic acids. The range includes also a magnetic based, and a particule based system for specific applications.

### TransIT® transfection

- ◆ Based on the *TransIT*®-LT (Low Toxicity) technology.
- ◆ Achieve higher transfection efficiencies and save time by transfecting in the presence of serum and eliminating media changes (except "insecta").
- ◆ Supplied with an optimized protocol, and a ready-to-use single vial.
- ◆ Available as optimized formulations for specific cell lines (following pages).

### TransIT®-siPAK and TransIT®-siPAK Plus Kits

- ◆ Supplied with trial size aliquots of our highly effective siRNA transfection reagents.
- ◆ Developed specifically for high efficiency siRNA delivery in mammalian cells.
- ◆ Each unique formulation offers a distinct transfection profile for each cell type.
- ◆ Low toxicity reagents proven to work effectively in a wide range of cell types.

The TransIT®-siQUEST™ and TransIT-TKO® Transfection Reagents are two highly effective siRNA delivery reagents. Each unique formulation provides a distinct transfection profile for high efficiency, broad-spectrum siRNA delivery into the cell type of interest. The TransIT® siPAK Kit is supplied with 0.1 ml of TransIT®-siQUEST™ Reagent and TransIT-TKO® Reagents which is sufficient quantity to perform up to 100 transfections in 24-well plates, depending on the specific siPAK cell type.

Cutting edge features of LT technology :

The exceptional and unique properties of TransIT technology, unlike others, do not disrupt the cell membrane but gently enters the cell. Since cell membrane permeabilization does not occur, transfection can be carried with serum and antibiotics present – i.e no media changes or special requirements.

See also 'Intracellular Nucleic Acid Localization with LabelIT Tracker kits (page D.156).

The TransIT® siPAK Plus Kit is also supplied with TransIT® siQUEST™ and TransIT® TKO reagents but also includes a delivery control. The Label IT® RNAi Delivery Control consists of a Fluorescein-labeled short RNA duplex that has the same length, charge, and configuration as standard siRNA. This RNAi Control is designed as a tool to facilitate visualization and optimization of dsRNA oligonucleotide delivery during RNAi experiments.

| Description                                    | Cat.#  | Qty    |
|--|--------|--------|
| TransIT-siPAK Kit                              | BL9880 | 1 unit |
| TransIT-siPAK Plus Kit (with delivery control) | BL9890 | 1 unit |

### Technical tip

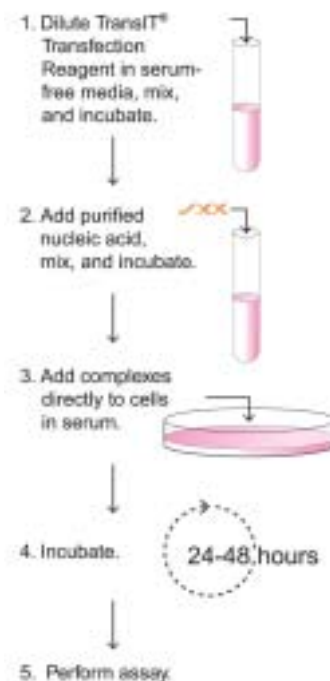
Applications:

Transfection - delivery of foreign molecules such as DNA into eukaryotic cells - has become a powerful tool for the study and control of gene expression in cells, e.g., for biochemical characterization, mutational analyses, or investigation of the effects of regulatory elements or cell growth behavior. It serves the understanding of molecular mechanisms of diseases, including the complex interplay of genetic and environmental factors, and stimulates the discovery of breakthrough healthcare products as well as designing new drugs, vaccines, and DNA diagnostics.

- ◆ Genes and Protein Reporters Assays (\*)
- ◆ in vivo transfection
- ◆ Oligonucleotides delivery
- ◆ antisense, siRNA delivery
- ◆ Tracking transfection
- ◆ Cell targeted transfection
- ◆ High throughput transfection
- ◆ genomic library construction
- ◆ genome sequencing studies
- ◆ subcloning, mutagenesis
- ◆ directed evolution studies

\*Reporter assays including Chloramphenicol acetyltransferase, Firefly luciferase, Human growth hormone, Green fluorescent protein

### Protocol Overview



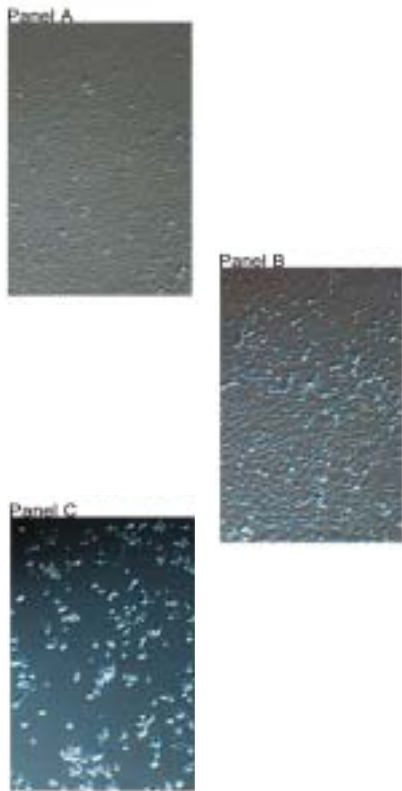
*TransIT*® Cell Line Specific Transfection Kits contain an additional booster reagent to enhance delivery in specific cell lines. An additional mixing step is required when using these kits.

See also "Intracellular Nucleic Acid Localisation" with Label IT Tracker™ kits (page D.156).

# Nucleic Acid Transfection

## TransIT<sup>®</sup> Transfection Tools

Comparative toxicity of *TransIT*<sup>®</sup>-LT1 Transfection Reagent and Another Leading Transfection Reagent in COS-7 Cells



In a transfection experiment, cells that are rounding up and peeling off of the surface of the plate characterize cellular toxicity. The photos compare toxicity among nontransfected cells (**panel A**), cells transfected with *TransIT*<sup>®</sup>-LT1 Reagent (**panel B**), and cells transfected with another leading transfection reagent (**panel C**). Each plate was treated identically, the only variable being the type of transfection reagent used. *TransIT*<sup>®</sup>-LT1 Reagent achieves high transfection efficiency, while leaving the cells healthy.

### *TransIT*<sup>®</sup>-LT1 and LT2 Transfection Reagent

- ◆ Proprietary formula combines histone and a unique polyamine for increased transfection efficiency in a wide range of established cell lines.
- ◆ Low toxicity reagent minimizes cell damage compared to liposome based reagents.
- ◆ One step, serum compatible reagent supplied with an optimized protocol.
- ◆ Ideal for a variety of applications

*TransIT*<sup>®</sup>-LT1 and LT2 (Low Toxicity) Transfection Reagent are designed to achieve high transient and stable transfection efficiencies in a variety of cell types, with minimal cellular toxicity. Highest transfection efficiencies are achieved when transfections are performed in the presence of serum-containing media, with no media change. These robust reagents are supplied with an optimized protocol and a ready-to-use single vial, which allows for high reproducibility. This unique combination of features makes *TransIT*<sup>®</sup>-LT1 and LT2 Transfection Reagent ideal for all gene expression studies where high efficiency and the post-transfection state of the cell is important.

### *TransIT*<sup>®</sup>-LT1 Transfection Reagent

Cell Lines successfully transfected include .

A549, BNL.CL2, BRL-3A, C2C12, \*C6, \*CHO-K1, Clone 9, \*COS-1, \*COS-7, \*Daoy, \*DBTRG-05MG, \*DI-TNC1, \*DU 145, \*HEK 293, \*HeLa, Hepa 1-6, Hepa 1cLc7, HepG2, HLF-a, Huh-7, \*HUVEC, \*Jurkat, \*K562, KB, KLN 205, \*LL/2 (LLC1), \*LNCaP-FGC, MCF-7, MEL, \*Neuro-2a, \*NIH3T3, OVCAR3, \*PC3, \*PC-12, \*primary human astrocytes, \*primary human chondrocytes, primary mouse hepatocytes, primary rat hepatocytes, \*primary human keratinocytes, \*RAW 264.7, \*SK-N-MC, SKOV3, \*SVGp12, SW900, \*THP-1, Vero, and WRL-68.

\**TransIT*<sup>®</sup> Cell Line Specific Reagents are also available for these cell lines.

### *TransIT*<sup>®</sup>-LT2 Transfection Reagent

Highly recommended for :

A549, \*CHO-K1, \*COS-7, \*HEK 293, \*HeLa, Huh-7, KB, \*Jurkat, MCF-7, \*NIH3T3, OVCAR3, SKOV3, and Vero.

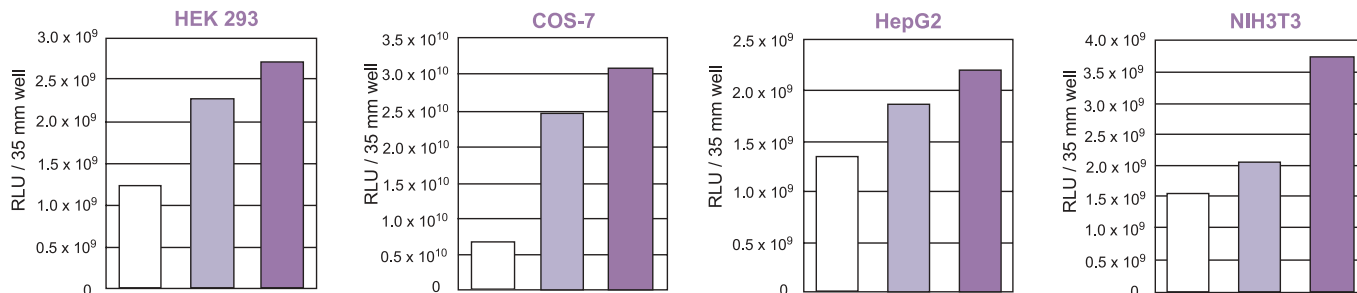
\**TransIT*<sup>®</sup> Cell Line Specific Reagents are also available for these cell lines.

Ask us for bibliography about these products.

| Description   | Cat.#  | Qty                 |
|---|--------|---------------------|
| <i>TransIT</i> <sup>®</sup> -LT1 Transfection Reagent | T06361 | 1 ml <sup>(1)</sup> |
|   | T06360 | 0.4 ml              |
|   | T06362 | 5 x 1 ml            |
|   | T06363 | 10 x 1 ml           |
| <i>TransIT</i> <sup>®</sup> -LT2 Transfection Reagent | J29041 | 1 ml <sup>(1)</sup> |
|   | J29040 | 0.4 ml              |
|   | J29042 | 5 x 1 ml            |
|   | J29043 | 10 x 1 ml           |

<sup>(1)</sup> 1ml provides sufficient reagent to perform up to 500 transfections in 35 mm dishes.

### *TransIT*<sup>®</sup>-LT1 Reagent Transfections Perform Better in the Presence of Serum



Transfections were performed using a luciferase reporter plasmid, and efficiencies were determined for the following : transfections performed in both Opti-MEM<sup>®</sup> serum-free medium and complete DMEM medium for 4 hours (with subsequent media change), and transfections performed in complete DMEM media until the time of cell harvest and assay (no media change). All cells were harvested 48 hours after transfection, and efficiencies were measured in relative light units (RLU). These studies demonstrate that *TransIT*<sup>®</sup>-LT1 Reagent provides the highest transfection efficiencies in the presence of serum with no media change.

- Cells transfected in Opti-MEM with media change after 4 hours
- Cells transfected in complete D-MEM with media change after 4 hours
- Cells transfected in complete D-MEM with no media change

### TransIT®-Express Transfection Reagent

For high-throughput transfections

- ◆ Simultaneous transfection and plating (24 h gain time)
- ◆ Achieve high efficiency plasmid delivery over a wide range of cell types.
- ◆ Combination of a nontoxic cellular protein and a small amount of a novel polyamine.
- ◆ Achieve higher transfection efficiencies and save time by transfecting in the presence of serum and eliminating media changes.
- ◆ Optimized protocol, and a ready-to-use single vial.

**TransIT®-Express Transfection Reagent** is designed for high-throughput plasmid transfection applications. The DNA/reagent complexes can be added directly to cells in complete media, and these complexes do not need to be removed after transfection. Alternatively, the complexes may be formed directly in 96-well plates, and the cells in complete growth media added subsequently. This can save significantly on time and expense invested in the transfection procedure.

| Description                           | Cat.#  | Qty                 |
|---------------------------------------|--------|---------------------|
| TransIT®-Express Transfection Reagent | J15581 | 1 ml <sup>(*)</sup> |
|                                       | J15580 | 0.4 ml              |
|                                       | J15582 | 5 x 1 ml            |
|                                       | J15583 | 10 x 1 ml           |

<sup>(\*)</sup> J15581 provides sufficient reagent to perform 5 000 transfections in 96-well plates, depending on the specific cell type being used.

### TransIT®-293 Transfection Reagent

- ◆ Achieve the highest transfection efficiency in HEK 293 cells.
- ◆ Quality control tested on a standard ATCC HEK 293 cell line to ensure consistent results.

**TransIT®-293 Transfection Reagent** is specifically designed to achieve the highest transfection efficiency in HEK 293 cells. This ready-to-use reagent results in 75-85% efficiency using pGFP as the reporter plasmid, with minimal cellular toxicity. Highest transfection efficiencies are achieved when transfections are performed in the presence of serum-containing media, with no media change.

| Description                       | Cat.#  | Qty                 |
|-----------------------------------|--------|---------------------|
| TransIT®-293 Transfection Reagent | T82840 | 1 ml <sup>(*)</sup> |
|                                   | T82841 | 0.4 ml              |
|                                   | T82842 | 5 x 1 ml            |
|                                   | T82843 | 10 x 1 ml           |

<sup>(\*)</sup> 1ml provides sufficient reagent to perform up to 500 transfections in 35 mm wells.

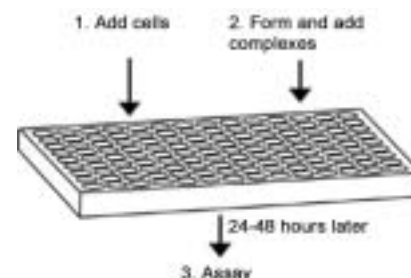
### TransIT®-3T3 Transfection Kit

- ◆ Achieve highest transfections efficiencies in 3T3 cells.
- ◆ Quality control tested on a standard NIH 3T3 cell line.

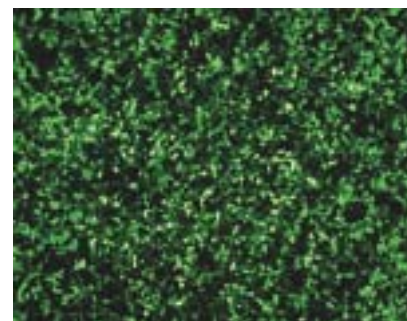
**TransIT®-3T3 Transfection Kit** is specifically designed to achieve the highest transfection efficiency in NIH 3T3 cells. This kit, which consists of TransIT®-3T3 Reagent and a 3T3 Authority Reagent, results in 55-65% efficiency using GFP as a reporter, with minimal cellular toxicity. Highest transfection efficiencies are achieved when transfections are performed in serum-containing medium with no medium change.

| Description                   | Cat.#                 | Qty       |
|-------------------------------|-----------------------|-----------|
| TransIT®-3T3 Transfection Kit | J18721 <sup>(*)</sup> | 1 ml      |
|                               | J18720                | 0.4 ml    |
|                               | J18722                | 5 x 1 ml  |
|                               | J18723                | 10 x 1 ml |

<sup>(\*)</sup> J18721 provides sufficient amounts of both reagents to perform up to 500 transfections in 35 mm wells.

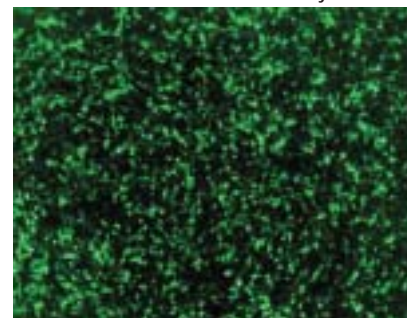


TransIT®-293 Transfection Reagent Efficiency



HEK 293 cells transfected with TransIT®-293 Reagent and pEGFP in complete media for 24 hours.

TransIT®-3T3 Transfection Kit Efficiency

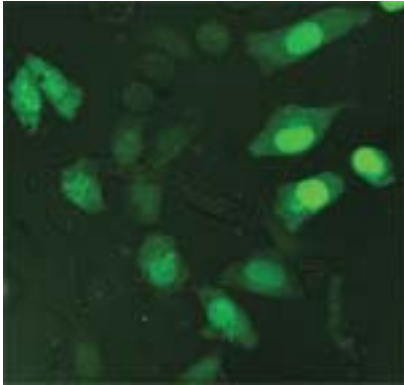


NIH 3T3 cells transfected with TransIT®-3T3 Transfection Kit and pGFP (Clontech) in complete media for 24 hours.

# Nucleic Acid Transfection

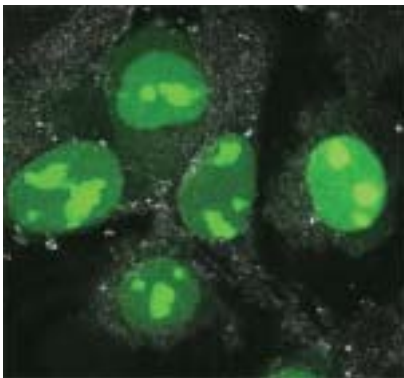
## TransIT® Transfection Tools

### TransIT®-CHO Transfection Kit Efficiency



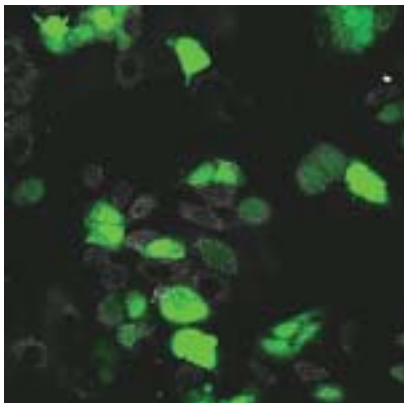
CHO-K1 cells transfected with TransIT®-CHO Transfection Kit and pEGFP (Clontech) in complete media for 48 hours.

### TransIT®-COS Transfection Kit Efficiency



Cells transfected with TransIT®-COS Transfection Kit and pEYFP-Nuc (Clontech) in complete media for 24 hours.

### TransIT®-HeLaMONSTER® Transfection Kit Efficiency



HeLa cells transfected with TransIT®-HeLaMONSTER® Kit and pEGFP in complete media for 24 hours.

### TransIT®-CHO Transfection Kit

- ◆ Achieve the highest transfection efficiency in CHO-K1 cells.
- ◆ Quality control tested on a standard CHO-K1 cell line.

**TransIT®-CHO Transfection Kit** is specifically designed to achieve the highest transfection efficiency in CHO-K1 cells. This kit, which consists of TransIT®-CHO Reagent and a CHO Mojo Reagent, results in 50-60% efficiency using GFP as a reporter, with minimal cellular toxicity. Highest transfection efficiencies are achieved when transfections are performed in serum-containing medium with no medium change.

| Description                   | Cat.#  | Qty                 |
|-------------------------------|--------|---------------------|
| TransIT®-CHO Transfection Kit | J17871 | 1 ml <sup>(1)</sup> |
|                               | J17870 | 0.4 ml              |
|                               | J17872 | 5 x 1 ml            |
|                               | J17873 | 10 x 1 ml           |

<sup>(1)</sup> 1ml provides sufficient amounts of both reagents to perform up to 500 transfections in 35 mm dishes.

### TransIT®-COS Transfection Kit

- ◆ Achieve the highest transfection efficiency in COS-7 and COS-1 cells.
- ◆ Quality control tested on a standard ATCC COS-7 cell line.

**TransIT®-COS Transfection Kit** is specifically designed to achieve the highest transfection efficiency in COS-7 and COS-1 cells. This kit, which consists of TransIT®-COS Reagent and a COS Boss Reagent, results in 90-95% efficiency using GFP as a reporter, with minimal cellular toxicity. Highest transfection efficiencies are achieved when transfections are performed in serum-containing medium with no medium change.

| Description                   | Cat.#  | Qty                 |
|-------------------------------|--------|---------------------|
| TransIT®-COS Transfection Kit | J21051 | 1 ml <sup>(1)</sup> |
|                               | J21050 | 0.4 ml              |
|                               | J21052 | 5 x 1 ml            |
|                               | J21053 | 10 x 1 ml           |

<sup>(1)</sup> 1ml provides sufficient amounts of both reagents to perform up to 500 transfections in 35 mm dishes.

### TransIT®-HeLaMONSTER® Transfection Kit

- ◆ Achieve the highest transfection efficiency in HeLa cells.
- ◆ TransIT®-HeLaMONSTER® is quality control tested on a standard ATCC HeLa cell line.

**TransIT®-HeLaMONSTER® Transfection Kit** is specifically designed to achieve the highest transfection efficiency in HeLa cells. This kit, which consists of a TransIT®-HeLa Reagent and the MONSTER Reagent, results in 50-60% efficiency using pGFP as the reporter plasmid, with minimal cellular toxicity. Highest transfection efficiencies are achieved when transfections are performed in serum-containing medium, with no medium change.

| Description                            | Cat.#  | Qty                 |
|--|--------|---------------------|
| TransIT®- HeLaMONSTER Transfection Kit | U28380 | 1 ml <sup>(1)</sup> |
|  | U28381 | 0.4 ml              |
|  | U28382 | 5 x 1 ml            |
|  | U28383 | 10 x 1 ml           |

<sup>(1)</sup> U28380 provides sufficient amounts of both reagents to perform up to 500 transfections in 35 mm wells.

### TransIT®-Insecta Transfection Reagent

- ◆ Achieve the highest transfection efficiency in insect cells.
- ◆ Transfections can be performed quickly, and are reproducible.
- ◆ Quality control tested on a standard ATCC Sf9 cell line to ensure consistent results.

**TransIT®-Insecta Transfection Reagent** is specifically designed to achieve the highest transfection efficiency in insect cell lines. This ready-to-use reagent results in 40-60% efficiency in Sf9 cells using Beta-galactosidase reporter vector, with minimal cellular toxicity. This unique formulation of lipids makes TransIT®-Insecta Transfection Reagent ideal for expressing genes and transfecting with recombinant baculovirus expression systems.

| Description                        | Cat.#  | Qty                 |
|------------------------------------|--------|---------------------|
| TransIT®- Insecta Transfection Kit | J26051 | 1 ml <sup>(1)</sup> |
|                                    | J26050 | 0.4 ml              |
|                                    | J26052 | 5 x 1 ml            |
|                                    | J26053 | 10 x 1 ml           |

<sup>(1)</sup> J26051 provides sufficient reagent to perform up to 250 transfections in 35 mm wells.

### TransIT®-Jurkat Transfection Reagent

- ◆ Optimized to achieve 10-25% transfection efficiency in Jurkat cells.
- ◆ Quality control tested on a standard ATCC Jurkat cell line to ensure consistent results.

The **TransIT®-Jurkat Transfection Reagent** is specifically optimized to provide superior transfection efficiency in Jurkat cells. Jurkat cells (human T-lymphocyte; acute T-cell leukemia) have been inherently difficult to transfect, yet have remained a prevalent cell line in the immunological research field. The specificity of the TransIT®-Jurkat Transfection Reagent makes this product a desirable alternative to broad spectrum transfection reagents. The reagent provides many attributes of the trusted TransIT® Reagent line : high efficiency, simplicity of use, and reproducibility. Transfections with the TransIT® Reagents do not require media changes and can be carried out in serum-containing media. These significant features establish the TransIT®-Jurkat Transfection Reagent as the product of choice for transfecting Jurkat cells.

| Description                           | Cat.#  | Qty                 |
|---------------------------------------|--------|---------------------|
| TransIT®- Jurkat Transfection Reagent | AX1611 | 1 ml <sup>(1)</sup> |
|                                       | AX1610 | 0.4 ml              |
|                                       | AX1612 | 5 x 1 ml            |
|                                       | AX1613 | 10 x 1 ml           |

<sup>(1)</sup> 1ml pour 250 transfections.

### TransIT®-Keratinocyte Transfection Reagent

- ◆ Achieve the highest transfection efficiency in keratinocytes.
- ◆ Quality control tested on NIKS (Near-Diploid Immortalized Keratinocytes) cells.

**TransIT®-Keratinocyte Transfection Reagent** is specifically designed to achieve the highest transfection efficiency in keratinocytes. This ready-to-use reagent results in 20-30% efficiency using pGFP as the reporter plasmid, with minimal cellular toxicity. Highest transfection efficiencies are achieved when transfections are performed in the presence of serum-containing media, with no media change.

| Description                                 | Cat.#  | Qty                 |
|---|--------|---------------------|
| TransIT®- Keratinocyte Transfection Reagent | J32161 | 1 ml <sup>(1)</sup> |
|   | J32160 | 0.4 ml              |
|   | J32162 | 5 x 1 ml            |
|   | J32163 | 10 x 1 ml           |

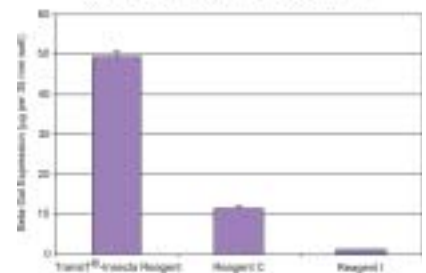
<sup>(1)</sup> 1ml provides sufficient reagent to perform up to 500 transfections in 35 mm wells.

#### TransIT®-Insecta Transfection Reagent Efficiency



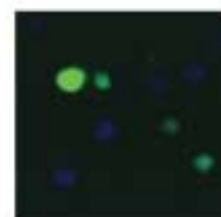
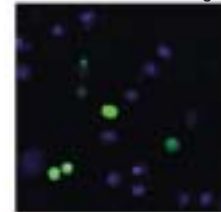
Sf9 cells transfected with a  $\beta$ -galactosidase reporter vector using *TransIT®-Insecta* Reagent. Reporter protein was detected using  $\beta$ -Galactosidase Staining Kit (J29660).

Comparison of Beta-Gal Expression Using *TransIT®-Insecta* Reagent, Reagent C, and Reagent I on Sf9 Cells



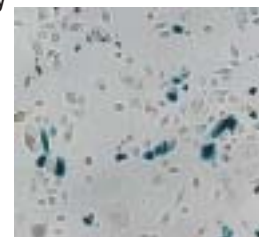
Sf9 cells transfected with a  $\beta$ -galactosidase-encoding construct according to manufacturer's instructions using *TransIT®-Insecta* Transfection Reagent, Reagent C and Reagent I in serum-free media. 48 hours post transfection,  $\beta$ -galactosidase expression was measured using a chemiluminescent assay (see page D.72).

#### TransIT®-Jurkat Transfection Reagent Efficiency



Jurkat, Clone E6-1 cells transfected with *TransIT®-Jurkat* Transfection Kit and pEGFP (Clontech) in complete media for 4 hours (green). Cells were fixed and then counter-stained with To-Pro-3 (Molecular Probes) to show cell nuclei (blue).

#### TransIT®-Keratinocyte Transfection Reagent Efficiency



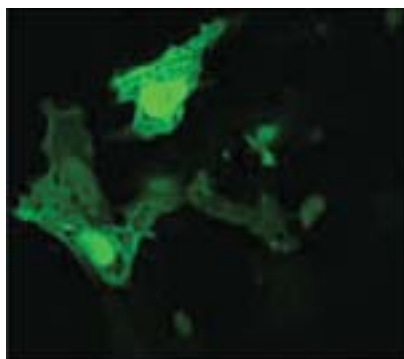
NIKS cells transfected with *TransIT®-Keratinocyte* Reagent and pLacZ for 48 hours. Reporter protein was detected using  $\beta$ -Galactosidase Staining Kit (J29660) (see page D.73).

# Nucleic Acid Transfection

## TransIT® Transfection Tools

### TransIT-Neural® Transfection Reagent

- ◆ Achieve the highest transfection efficiencies in a wide range of neural cell types.
- ◆ Observe significantly reduced levels of cell damage compared to liposomal based transfection reagents.
- ◆ Quality control tested on a standard ATCC Neuro-2a cell line.



DI-TNC1

TransIT-Neural® Transfection Reagent is a novel formulation specifically developed to achieve superior transfection efficiency in a wide range of neural cell types without sacrificing cell viability. This ready-to-use reagent results in up to 75% efficiency using pGFP as the reporter plasmid. Highest efficiencies are achieved when transfections are performed in the presence of serum-containing media, with no media change.

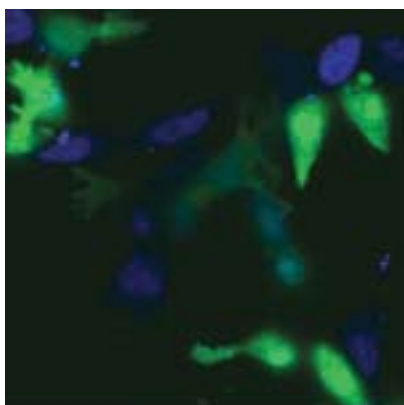
Neural Cell Types Successfully Transfected : C6, Daoy, DBTRG-05MG, DI-TNC1, HCN-1A, Neuro-2a, PC-12, Secondary human astrocytes, SK-N-MC, SVG p12

| Description                          | Cat.#  | Qty                 |
|--------------------------------------|--------|---------------------|
| TransIT-Neural® Transfection Reagent | U47351 | 1 ml <sup>(1)</sup> |
|                                      | U47350 | 0.4 ml              |
|                                      | U47352 | 5 x 1 ml            |
|                                      | U47353 | 10 x 1 ml           |

<sup>(1)</sup> 1 ml provides sufficient reagent to perform up to 500 transfections in 12-well plates.

### TransIT®-Prostate Transfection Kit

- ◆ Optimized to achieve greater than 50% transfection efficiencies using GFP as a reporter in common prostate cancer cell lines: PC-3, DU 145 and LNCaP-FGC.
- ◆ Observe significantly reduced levels of cell damage compared to liposomal based transfection reagents.
- ◆ Quality tested with a standard LNCaP cell line to ensure consistent results.



LNCaP-FGC cells

The **TransIT®-Prostate Transfection Kit** is specifically optimized to provide superior transfection efficiency in prostate cells without sacrificing cellular health. Generally, prostate cell types have been moderately difficult to transfect, yet have remained a prevalent cell line in the cancer research field.

The specificity of the TransIT®-Prostate Transfection Kit makes this product a desirable alternative to broad spectrum transfection reagents. The kit provides all the attributes of the trusted TransIT® Reagent line: high efficiency, low toxicity, simplicity of use, and reproducibility. Transfections with the TransIT® Reagents do not require media changes and can be carried out in serum-containing media. In addition, the TransIT®-Prostate Transfection Kit is quality control tested on ATCC LNCaP cells. These significant features establish the TransIT®-Prostate Transfection Kit as the product of choice for transfecting prostate cells.

| Description                            | Cat.#  | Qty                 |
|--|--------|---------------------|
| TransIT®-Prostate Transfection Reagent | AO0871 | 1 ml <sup>(1)</sup> |
|  | AO0870 | 0.4 ml              |
|  | AO0872 | 5 x 1 ml            |
|  | AO0873 | 10 x 1 ml           |

<sup>(1)</sup> 1 ml provides sufficient reagent to perform up to 500 transfections in 35 mm wells.

PC-3 cells transfected using the TransIT®-Prostate Transfection Kit and pEGFP in complete media for 48 hours.