Efficient mRNA Delivery in difficult-to-transfect cells with jetMESSENGER® Transfection Reagent

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Abstract

Messenger RNA transfection is a new solution for a wide variety of cells that are difficult to transfect with plasmid DNA including adherent (neurons or primary cells) and suspension cells (lymphocytes). This process has many advantages over DNA transfection: high percentage of transfected cells, faster protein expression following transfection, and no risk of insertional mutagenesis in contrast to plasmid or viral vectors. In fact, mRNA is delivered and expressed in the cytoplasm and does not require to cross the nuclear membrane, one of the limiting steps in plasmid transfer. Furthermore, the last generation of vectors. In fact, mRNA is delivered and expressed in the cytoplasm and does not require to cross the nuclear membrane, one of the limiting steps in plasmid transfer. Furthermore, the last generation of vectors.

Introduction: Mechanism of transfection of jetMESSENGER®

Primary rat Cortex neurons Murine embryonic Stem Cells

High efficiency on a wide variety of difficult to transfect cells

GFP expression was assayed by fluorescence microscopy in Jurkat cells 24 h after transfection.

Transfection efficiency was assessed by fluorescence microscopy in Jurkat cells 24 h after transfection.

Advantages of jetMESSENGER®

High efficiency on a wide variety of difficult to transfect cells

Outperforms DNA transfection by switching to mRNA

Extremely gentle on cells

No risk of genome integration

Perfectly suited for CRISPR/Cas9 gene editing, iPS generation, stem cell differentiation and immunotherapy assays

References:


Protocol

mRNA transfection in culture plate 24-well:

1. Dilute 0.5 µg mRNA into 50 µL mRNA buffer and vortex briefly.

2. Add 1 µL jetMESSENGER®.

3. Vortex and incubate for 15 min at RT.

4. Add 50 µL of transfection mix per well dropwise onto the cells in growth medium (containing serum or not) and/or additives (standard culture medium), and distribute evenly.

5. Gently rock the plate back and forth and from side to side.

6. Analyze at least 24 - 48 h later

Transfection efficiency was assessed by FACS analysis in Caco-2 cells 24 h after transfection of EGFP mRNA (L-6101, Trilink™).

References: