Improved gene expression in hard-to-transfect cells with jetOPTIMUS® Transfection Reagent

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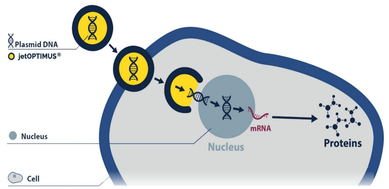
Polyplus transfection®

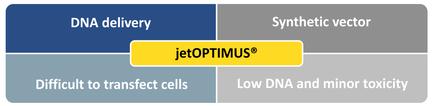
Abstract

DNA transfection remains a limiting factor for many researchers working with primary cells and specific cell lines. Considering the limiting steps in these hard-to-transfect cell types and based on our knowledge and expertise in transfection, we have addressed this issue by developing a novel DNA transfection reagent, **jetOPTIMUS®**. This reagent improves DNA delivery and intracellular transport ending by higher gene expression in hard-to-transfect primary cells and cell lines. This reagent associates higher transfection efficiency and lower toxicity compared to the best commercially available competitors. DNA transfection reagent jetOPTIMUS® is easy to use and provides highly reproducible results.

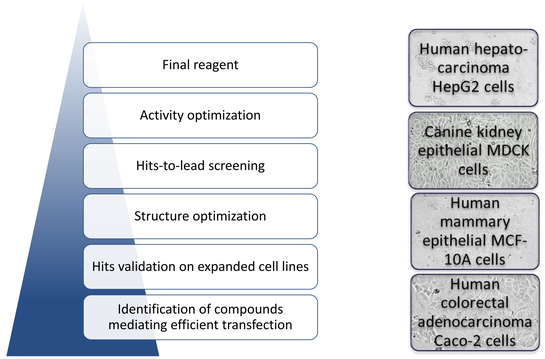


jetOPTIMUS® development

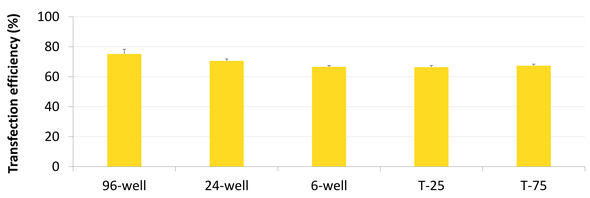
High-throughput screening of a proprietary chemical compounds library was performed to select new molecules leading to superior transfection efficiency while maintaining excellent cell viability in different cell types. After hits identification and validation, we optimized their chemistry through structure/activity relationship (SAR) studies to select the best one, jetOPTIMUS®.



The jetOPTIMUS® project

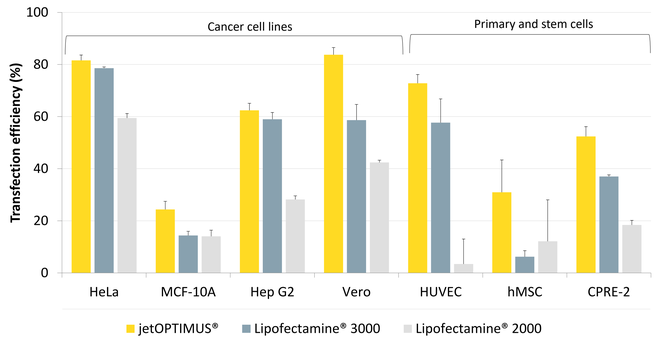


Easy to scale up and down

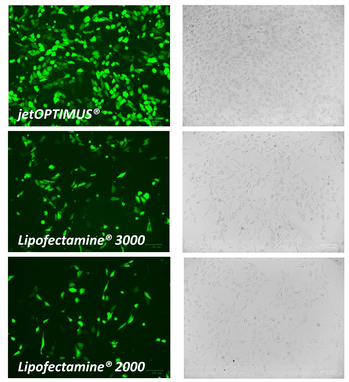


Transfection efficiency was assessed by FACS analysis in HeLa cells 24 h after transfection of EGFP plasmid (pCMV-EGFP) with jetOPTIMUS® .

Superior gene expression in hard-to-transfect cells

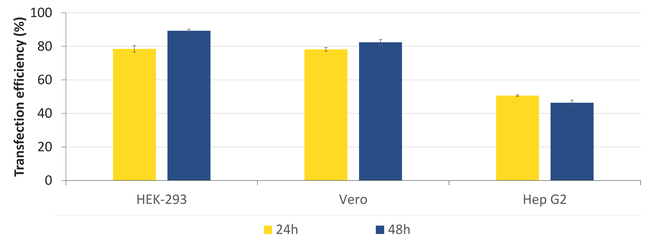


Transfection efficiency was assessed by FACS analysis 24 h after transfection of plasmid DNA encoding for EGFP (pCMV-EGFP) with jetOPTIMUS®, Lipofectamine® 2000 and Lipofectamine® 3000 in primary cells and cancer cell lines.

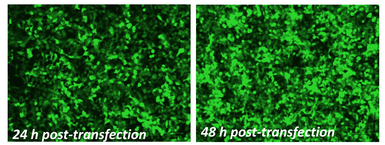


GFP expression was assayed by fluorescence microscopy in Vero cells 24 h after transfection.

Maintained gene expression post-transfection



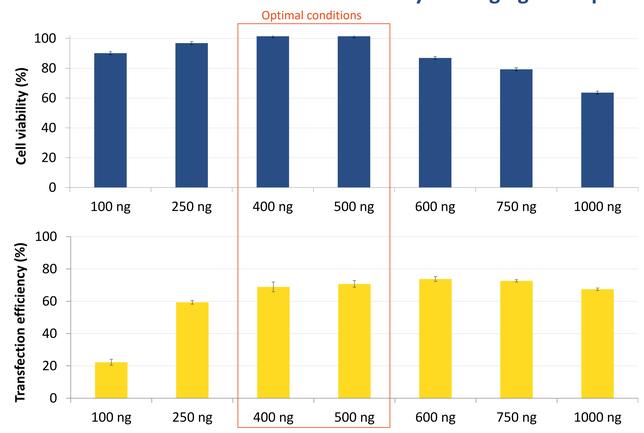
GFP expression was assessed by FACS in HEK-293, Vero and Hep G2 cells 24 h and 48 h after transfection of plasmid DNA encoding for EGFP (pCMV-EGFP) with jetOPTIMUS®.



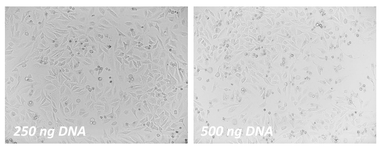
GFP expression was assayed by fluorescence microscopy in SH-SY5Y (neuroblastoma cell line) 24 h or 48 h after transfection with jetOPTIMUS®.

Data kindly provided by Oya ARI UYAR (Gebze Technical University, Kocaeli, Turkey.)

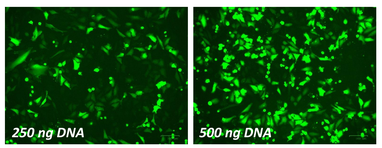
Excellent cell viability and high gene expression using low DNA amount



Cell viability (**in blue**) was assessed with XTT analysis in HeLa cells 24 h after transfection of EGFP plasmid (pCMV-EGFP) with jetOPTIMUS® in 24-well plates. GFP expression (**in yellow**) was analyzed by FACS also 24 h after transfection.

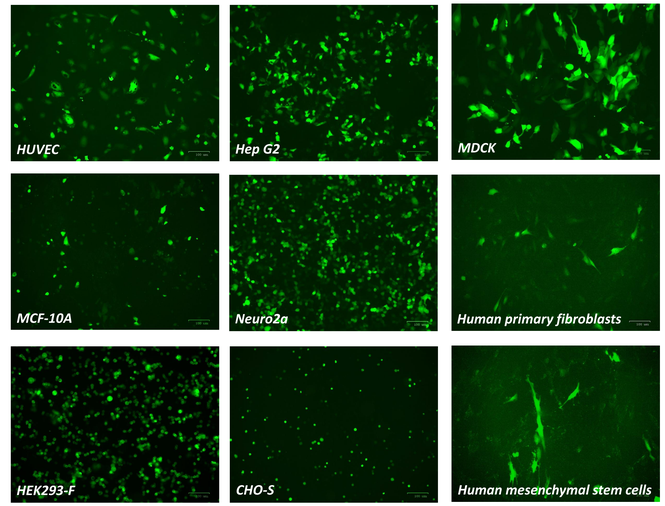


Cell viability and morphology was assayed in HeLa cells by microscopy 24 h after transfection with jetOPTIMUS®.

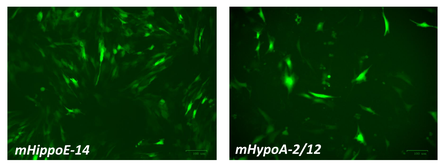


GFP expression was assayed by fluorescence microscopy in HeLa cells 24 h after transfection with jetOPTIMUS®.

High EGFP expression in various cell types



GFP expression was assayed by fluorescence microscopy in various cell lines 24 h after transfection with jetOPTIMUS®.



GFP expression was assayed by fluorescence microscopy in mHippoE14 (Embryonic Mouse Hippocampal cell line) and mHypoA-2/12 (Adult Mouse Hypothalamus cell line) 24 h after transfection with jetOPTIMUS®

Data kindly provided by Oya ARI UYAR (Gebze Technical University, Kocaeli, Turkey).

Best-in-class DNA transfection reagent

Transfection with jetOPTIMUS® preserves cell viability and morphology of sensitive cells as it requires **lowest amount of DNA** and **volume of reagent** while reaching **high transfection efficiency** in physiological conditions. This reagent associates higher transfection efficiency and lower toxicity compared to other commercially available delivery solutions. DNA transfection using jetOPTIMUS® is straightforward and provides highly reproducible results.

- **Highly efficient:** Reach maximal gene expression in many cell types
- **Cost-effective:** Use lowest reagent volume and DNA quantity
- **Biologically relevant:** Keep an excellent cell viability & morphology
- **Time-saving:** Transfect with an optimized ready-to-use protocol

www.polyplus-transfection.com