nanoTherics Limited

magnefect use for neuron transfection

High Performance Transfection Products

NEURONAL TRANSFECTION USING THE MAGNEFECT PRODUCT RANGE

The magnefect systems from nanoTherics use improved gene transfection technology which applies oscillating magnet arrays and magnetic nanoparticles to promote particle/DNA uptake into cells.

The systems are proven to provide:

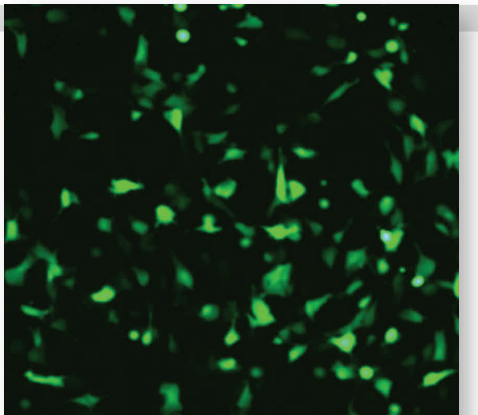
- **Excellent cell viability (~100% in some cells)**
- **Improved transfection efficiency and effectiveness**
- **Low running costs (as low as $0.1 per well)**
- **Speed (<30 minutes) and scalability**

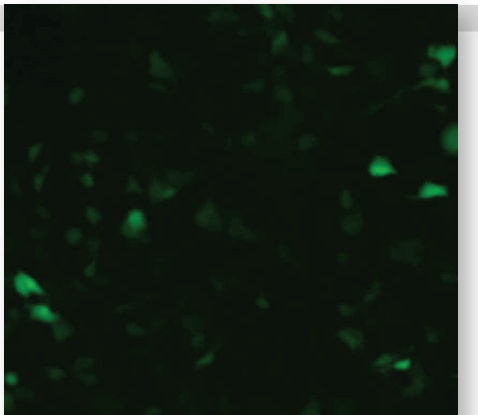
See below for comparison against current techniques using SH-SY5Y cells

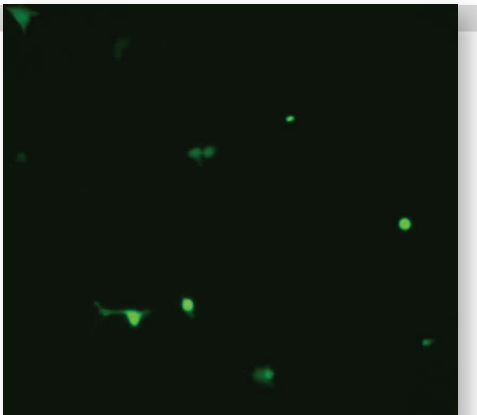
- **Higher cell viability (>80% in undifferentiated cells)**
- **Higher transfection efficiency (70-80% in undifferentiated cells)**
- **Higher protein expression**

The magnefect-nano II


The magnefect product range


magnefect-nano 48 hours post-transfection


Electroporation 48 hours post-transfection


Leading lipid reagent 48 hours post-transfection

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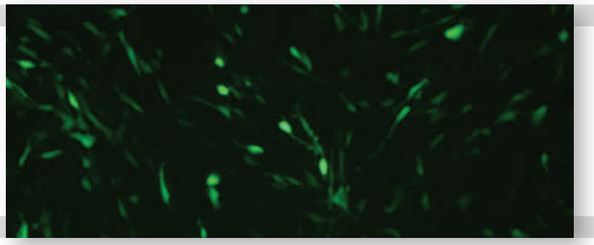
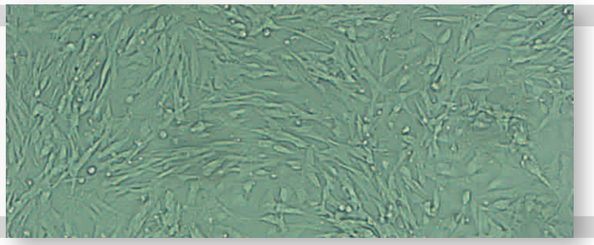
DIFFERENTIATED SH-SY5Y CELLS

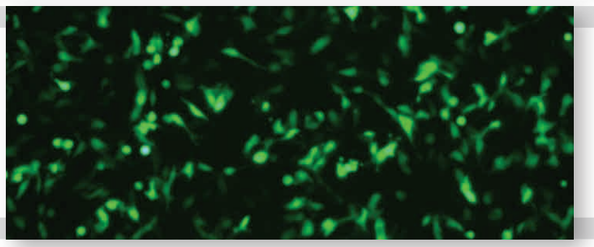


Transfection efficiency: **40 - 50%**

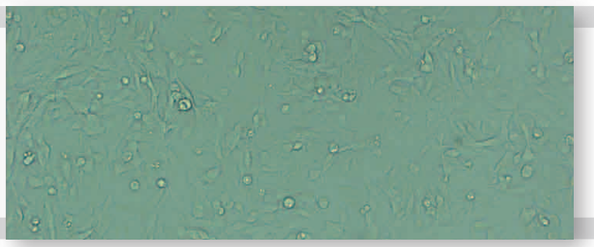


Cell viability: **70%**

UNDIFFERENTIATED SH-SY5Y CELLS

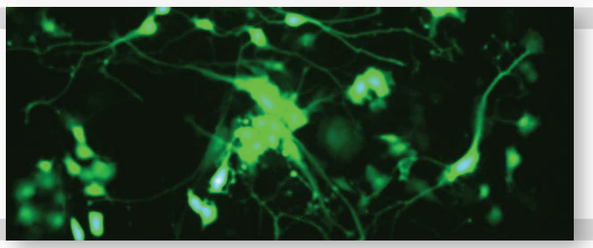


Transfection efficiency: **70 - 80%**

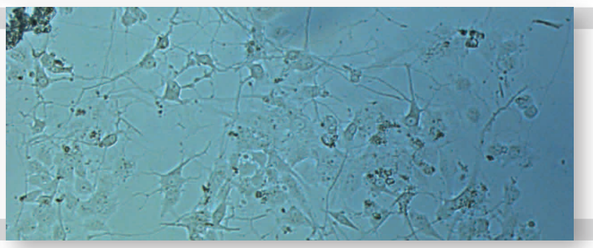


Cell viability: **80 - 90%**

DIFFERENTIATED PC-12 CELLS



Transfection efficiency: **20 - 30%**

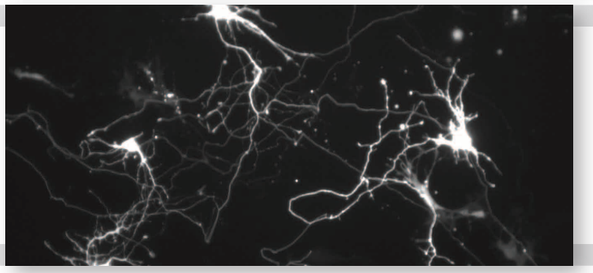


Cell viability: **80 - 90%**

PRIMARY CELL TRANSFECTION

The magnefect product range offers improved transfection efficiency, cell viability and possibility of transfection in adherent state.

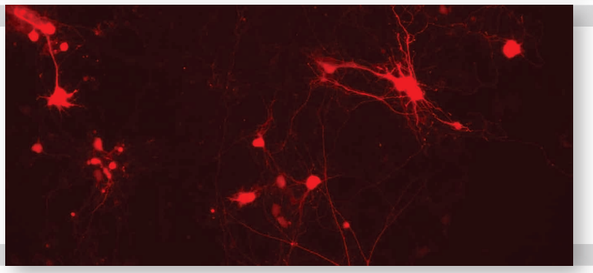
PRIMARY HIPPOCAMPAL NEURONS



Transfection

Fluorescent images of Primary Hippocampal Neurons in a mixed neuronal culture transfected with td-Tomatoe

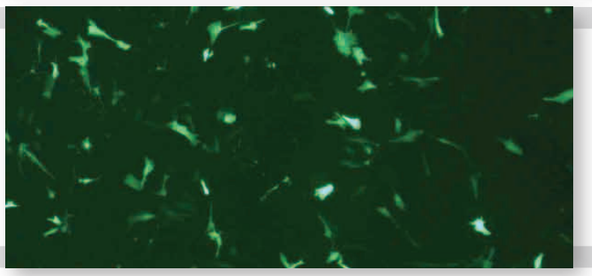
(Data courtesy of Dr Joseph Steiner, Associate Professor of Neurology, School of Medicine, Johns Hopkins University, USA)



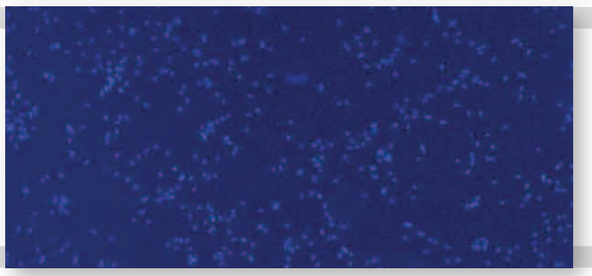
Re-Transfection

Fluorescent images of Primary Hippocampal Neurons in a mixed neuronal culture transfected with td-Tomatoe and followed by retransfection of beta-tubulin td-Tomatoe fusion protein

PRIMARY RAT ASTROCYTES



Transfection efficiency: **55 - 65%**



Cell viability: **~100%**

(Data courtesy of Dr. D. Chari and Dr. M. Pickard, Cellular & Neural Engineering Group, Keele University, UK)

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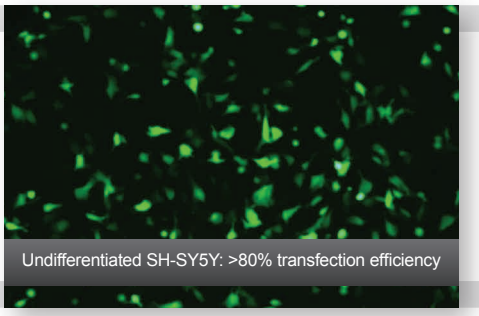
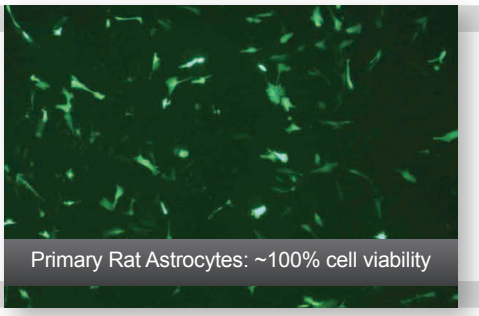
MAGNEFECT PRODUCT RANGE - PROVEN PERFORMANCE AND BENEFITS

More efficient transfection: *provides improved results*



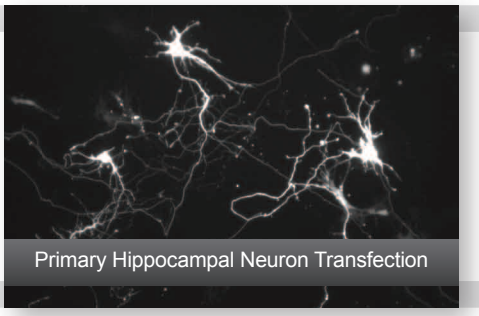
Undifferentiated SH-SY5Y: >80% transfection efficiency

No adverse effects on cell viability (even after 72 hours): *enables potential for in vivo / ex-vivo use*



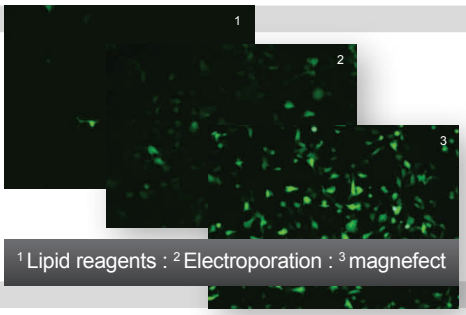
Primary Rat Astrocytes: ~100% cell viability

Transfection in adherent state: *no need for trypsinisation / detachment of cells*



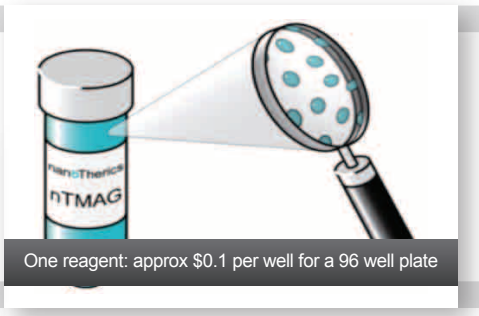
Primary Hippocampal Neuron Transfection

Higher levels of protein expression: *improved results*



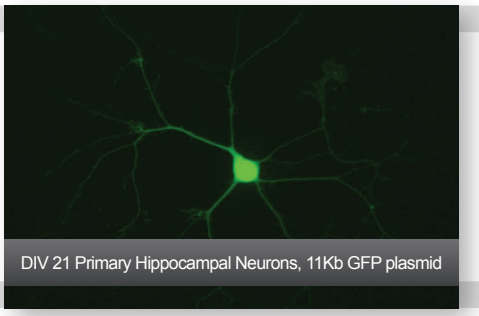
[1] Lipid reagents : [2] Electroporation : [3] magnefect

Inexpensive to use: *reduces costs*

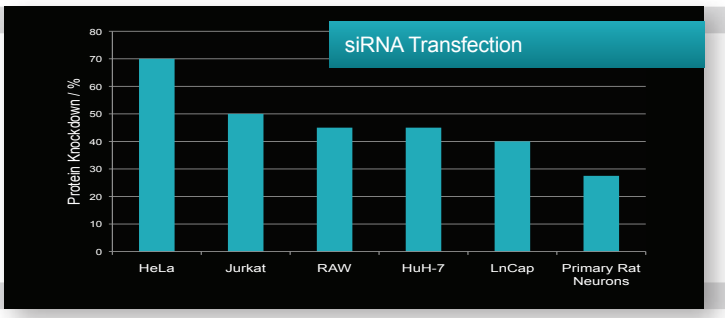


One reagent: approx $0.1 per well for a 96 well plate

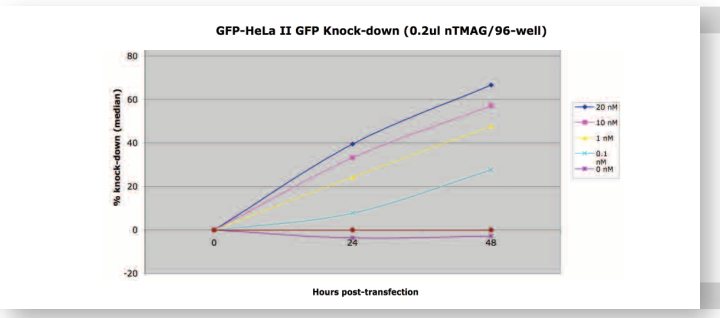
Transfection of large plasmids even in difficult cell types



DIV 21 Primary Hippocampal Neurons, 11Kb GFP plasmid



(EG5 knockdown: Data courtesy of Janssen Pharmaceutica, Belgium)



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