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# MagnetoFection™

## An innovative transfection technology

### Magnetic nanoparticles for nucleic acids and small molecules delivery

This method associates nucleic acids or other vectors with magnetic nanoparticles coated with cationic molecules. The magnetic nanoparticles are made of iron oxide, which is fully biodegradable, coated with specific cationic proprietary molecules varying upon applications. Their association with the gene vectors (DNA, siRNA, ODN, virus, etc.) is achieved by salt-induced colloidal aggregation and electrostatic interaction.

### Intracellular uptake of nanoparticles

The resulting molecular complexes are then targeted to and endocytosed by cells, supported by an appropriate magnetic field. Membrane architecture and structure stay intact in contrast to other physical transfection methods that damage, create hole or electroshock the cell membranes. In addition the magnetic nanobeads are completely biodegradable and not toxic at the recommended doses and even higher. In this manner, the complete applied vector dose gets concentrated on the cells within a few minutes. Consequently, 100% of the cells get in contact with a significant vector dose.

### Intracellular release of vectors and drugs

The nucleic acids or other vectors are then released into the cytoplasm by different mechanisms depending on the formulation used. One is the proton sponge effect caused by cationic polymers coated on the nanoparticles that promotes endosome osmotic swelling, disruption of the endosomal membrane and intracellular release of associated molecules. Second is the destabilization of the endosome by cationic lipids coated on the particles that release the vectors into cells by flip-flop of cell negative lipids and charged neutralization. Third one is the usual viral mechanism when virus is used.

Inspired by the validated and recognized magnetic drug targeting technology, this innovative method is a revolution for transfection and infection.

# MagnetoFection™ applications and results

MagnetoFection™ has been successfully tested on a broad range of cells and cell lines. It is perfect for hard-to-transfect cells, primary cells and non dividing or slowly dividing cells. We have shown that combining magnetic nanoparticles to gene vectors of any kind results in a dramatic increase of uptake of these vectors and high transfection or delivery efficiency.

Several optimized reagents have been designed according to define applications:

[PolyMag Neo](#) : A new reagent for all nucleic acids transfection

[PolyMag](#): for all nucleic acids transfection

[CombiMag](#): for enhancing all transfection reagents efficiency

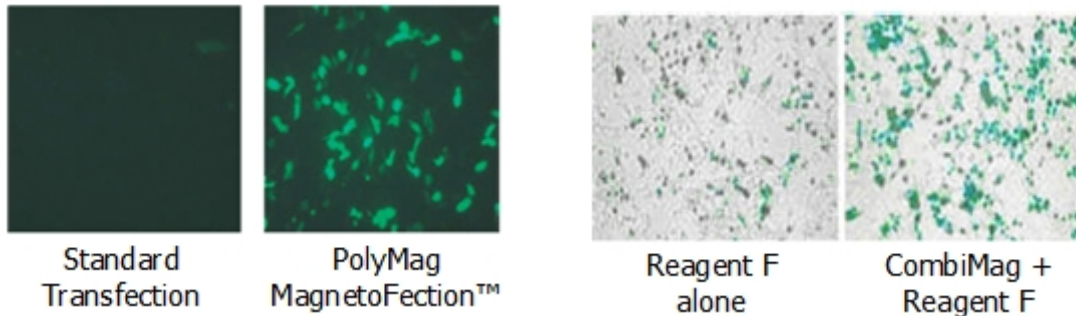
[ViroMag and ViroMag R/L](#) : for virus transduction

[AdenoMag](#) : for adenovirus & AAV transduction **NEW**

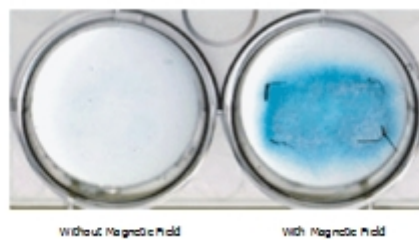
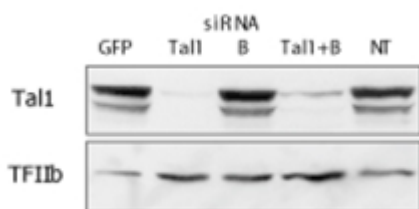
[SilenceMag](#) : for siRNA applications

[Neuromag](#) : for Neurons transfection

## Primary Human Keratinocytes transfection    Primary Pig Chondrocytes transfection

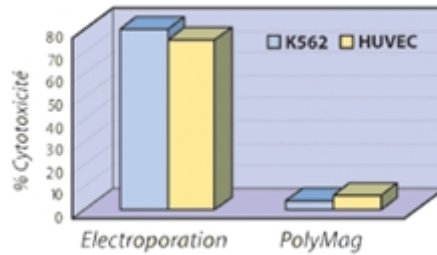


## siRNA delivery in HUVEC with SilenceMag    Adenovirus infection with ViroMag

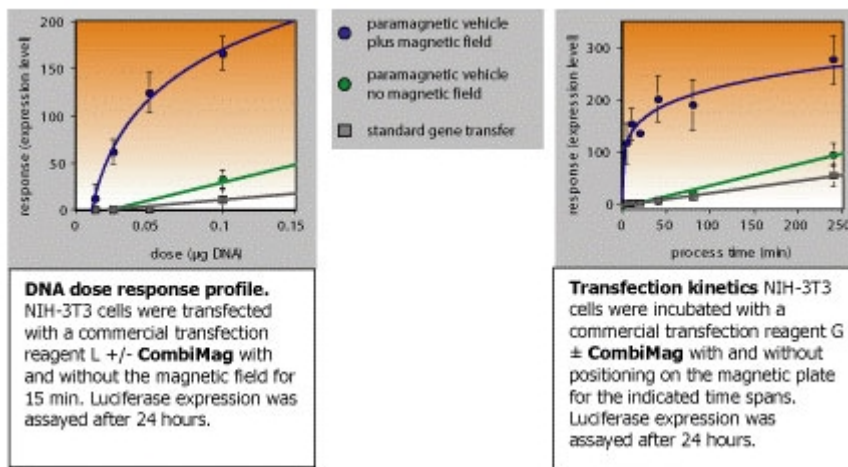


# MagnetoFection™ advantages

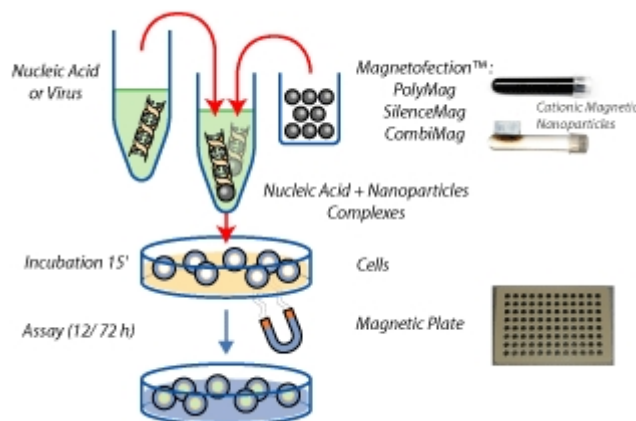
## Non toxic method



## Rapid and efficient even with low DNA doses



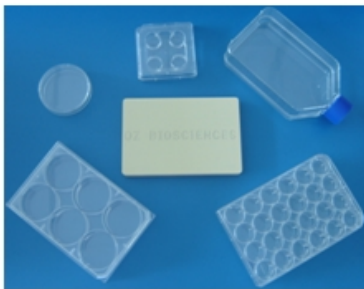
## Rapid and straightforward protocol



## MagnetoFection™ equipment

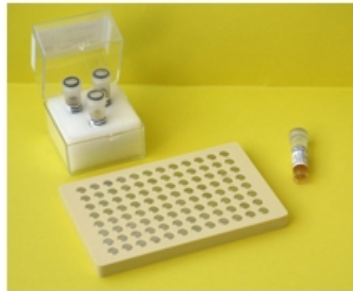
The only requirement for MagnetoFection™ is a magnetic plate specifically designed for this application. The magnetic plate is a one-time buy and completely reusable, so you do not need expensive equipment contrary to approaches such as electroporation or gene gun. Two optimized magnetic plates with improved properties have been developed to allow you reaching the best levels of nanobeads delivery. Its design allows producing a magnetic field that magnetizes the nanoparticles in solution, forms a very strong gradient to attract them and covers all the surface of the plate.

### Super Magnetic Plate



Convenient for all cell culture support  
Catalog number  
# OZB-MF10000

### Magnetic plate with 96 magnets



Adapted to 96-well plates  
Catalog number  
# OZB-MF10096

### Mega Magnetic plate



To hold 4 culture dishes at one time. Catalog number  
# OZB-MF14000

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