POLYMAG PREMIUM Results

1. Description.

PolyMag Premium™ is a Magnetic nanoparticle formulation specifically designed to achieve high transfection efficiency in a wide variety of primary and hard-to-transfect cells.

2. Storage and shipping condition.

Storage: -20°C upon reception and for long-term use.
Stability: 1 year
Shipping condition: The reagent is shipped at RT

POLYMAG PREMIUM and hard-to-transfect cells

POLYMAG PREMIUM enhances transfection in hard-to-transfect cells.

PolyMag Premium magnetic nanoparticles formulation was complexed with plasmid DNA encoding for GFP. After 20 min incubation at Room Temperature (RT), the complexes were added to the cells. The cells were then placed on a magnetic plate for 20 min at room temperature before being returned to incubation at 37°C. 48H later, the % of GFP+ cells and the fluorescence intensity were monitored by flow cytometry.

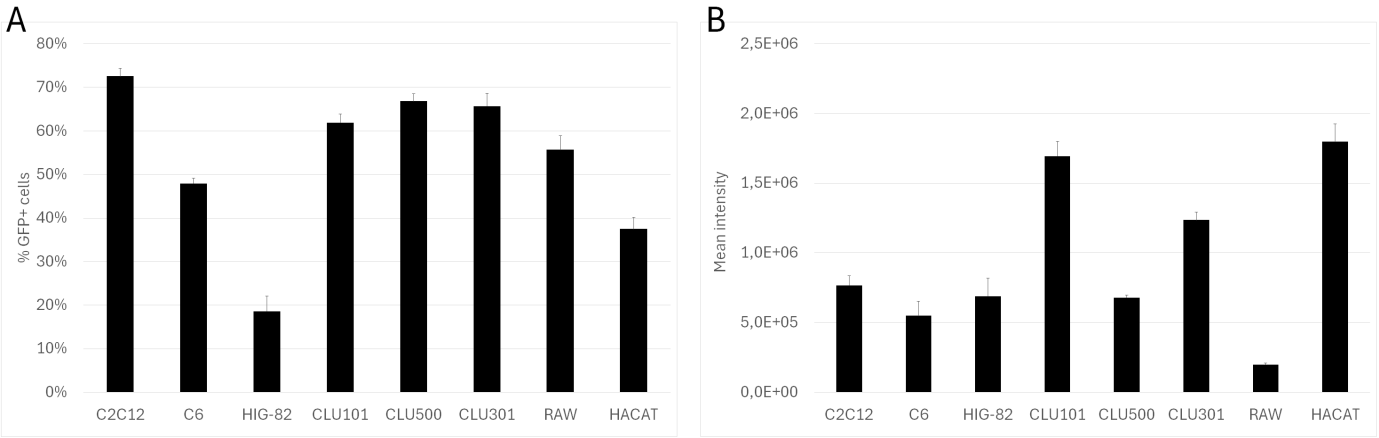

Figure 1: Transfection of Hard-to-transfect cell lines with 0.5 µg DNA: % GFP+ cells (A) and fluorescence intensity (B) were measured after 48H.

Results demonstrate the capacity of PolyMag Premium to efficiently transfect hard-to-transfect cell lines with plasmid DNA.

POLYMAG PREMIUM outperforms competitors

PolyMag Premium performs better than rivals both in terms of % of transfected cells and in terms of fluorescence intensity.

DNA encoding for GFP was complexed with PolyMag Premium and competitors according to their respective protocols. After incubation, complexes were added to the cells and incubated for 48H under standard culture conditions; Magnetofection procedure was applied to PolyMag Premium complexes. Transfection efficiency was monitored under fluorescence microscopy and percentage of GFP+ cells as well as fluorescence intensity were determined by flow cytometry.

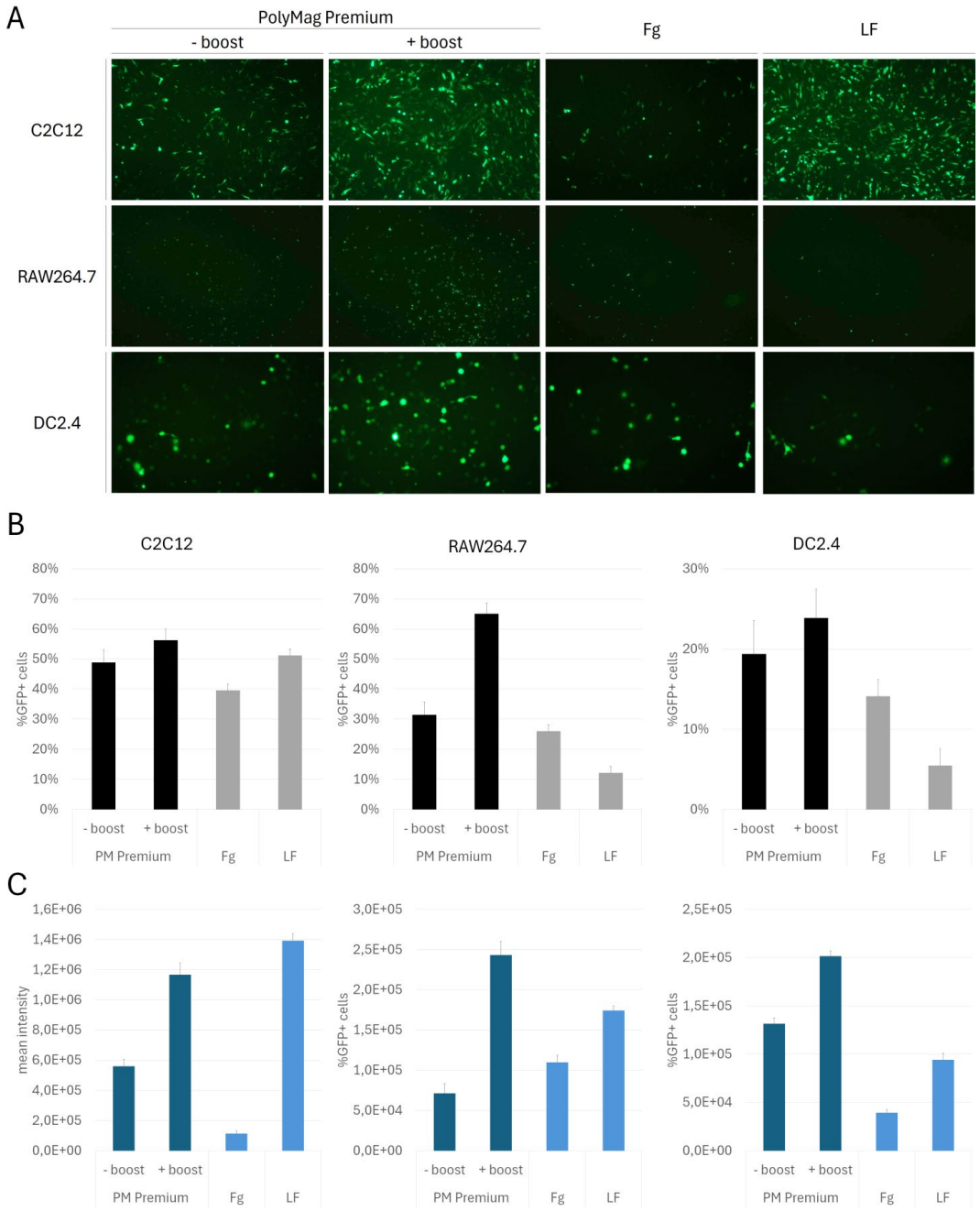

Figure 2: Comparison of transfection efficiency between PolyMag Premium and competing reagents: C2C12, RAW264.7 and DC2.4 cells were transfected with PolyMag Premium alone (- boost) or in presence of boost (+ boost) or with competitors according to protocols (*Fg = Fugene HD, LF = Lipofectamine 3000*). Transfection efficiency was confirmed by fluorescence microscopy (A) and % GFP+ cells (B) and fluorescence intensity (C) were measured after 48H by flow cytometry.

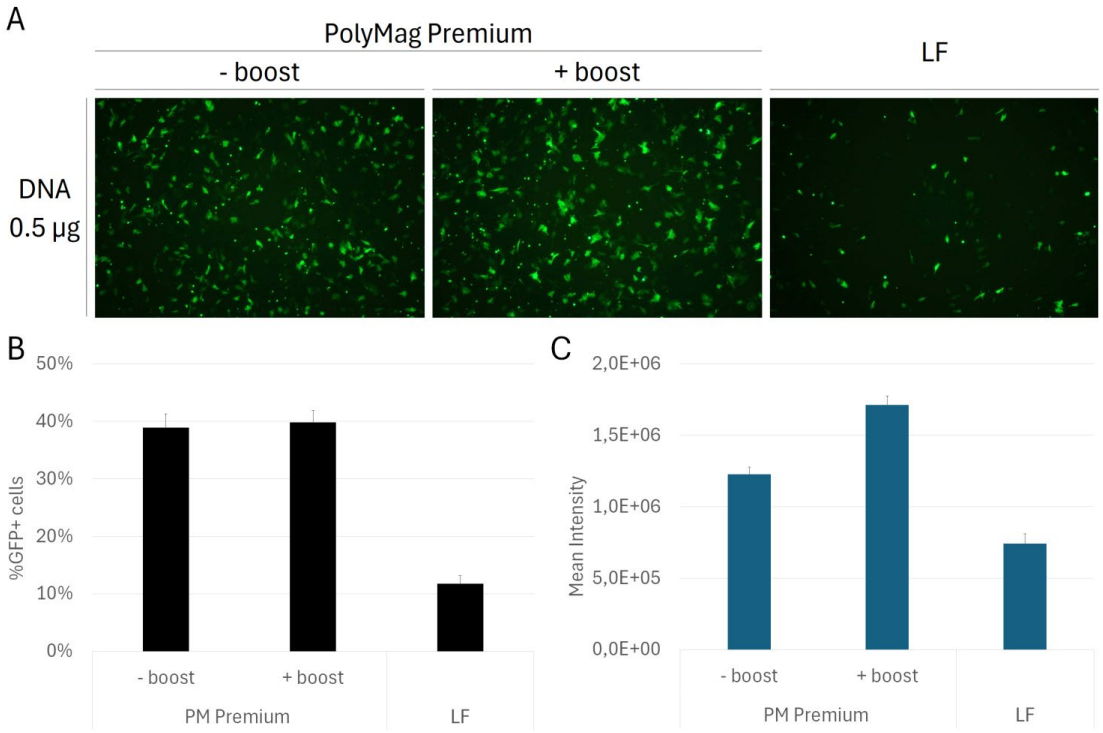

Figure 3: Comparison of transfection efficiency between PolyMag Premium and competing reagents in Mesenchymal Stem Cells: Mesenchymal Stem Cells (MSC) were transfected with PolyMag Premium alone (- boost) or in presence of boost (+ boost) or with competitor according to protocols (*LF = Lipofectamine 3000*). Transfection efficiency was confirmed by fluorescence microscopy (A) and % GFP+ cells (B) and fluorescence intensity (C) were measured after 48H by flow cytometry.

Results demonstrate that:
1. PolyMag Premium alone performs better than competitors in terms of % of transfected cells and intensity of fluorescence.
2. PolyMag Premium Boost allows increasing the fluorescence intensity of transfected cells as well as the % of GFP+ cells depending on the cell type.
3. Interestingly, in cell types where PolyMag Premium Boost does not increase % of GFP+ cells, it allows a dramatic increase in fluorescence intensity.

Altogether the results demonstrate that PolyMag Premium outperforms competitors for hard--transfect as well as Mesenchymal Stem Cells.

PolyMag Premium Toxicity

POLYMAG PREMIUM formulation is totally non-toxic for the cells.

PolyMag Premium and the PolyMag Premium Boost are made from proprietary bio-degradable materials that ensure high transfection efficiency while minimizing impact on cellular viability. When compared to competitors, the transfection efficiency was demonstrated to be higher, and we show here that there is no impact on cell viability. After transfection with PolyMag Premium and competitors, viability was measured using the OZBlue viability assay kit (OZ Biosciences Ref #BL00100).

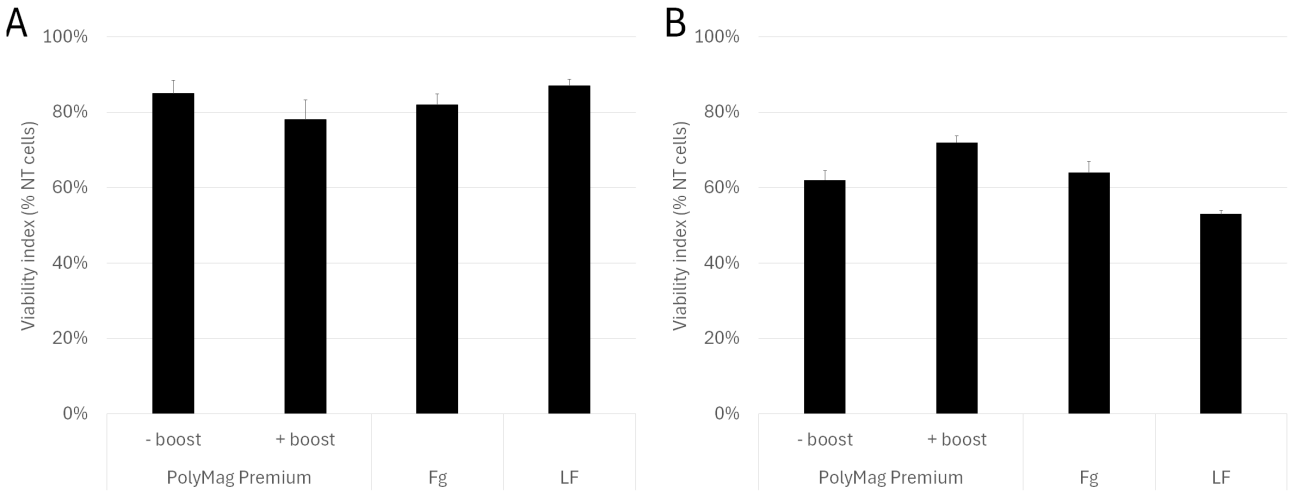

Figure 4: Viability measurement after transfection: Vero Cells (A) and RAW264.7 cells (B) were transfected with PolyMag Premium alone (- boost) or in presence of boost (+ boost) or with competitor according to protocols (*Fg = Fugene HD, LF = Lipofectamine 3000*). Viability was measured 48H after using the OZBlue assay Kit and results were expressed as % of non-treated cells.

Results demonstrate that PolyMag Premium not only is highly efficient for genetically modify hard-to-transfect cells but also preserves cellular viability.

POLYMAG PREMIUM for gene silencing

POLYMAG PREMIUM allows silencing gene expression mediated by siRNA.

PolyMag Premium performs also well for siRNA transfection aiming at silencing gene expression. Two cell lines stably transfected to express GFP were used in this experiment. Complexes of PolyMag Premium and ranging concentrations of siRNA targeting GFP and GAPDH, from 5 nM to 50 nM were formed by incubation at room temperature during 20 minutes and added to the cells. After Magnetofection procedure on a magnetic plate, the cells were incubated under standard culture conditions for 72H until evaluation of the experiment.

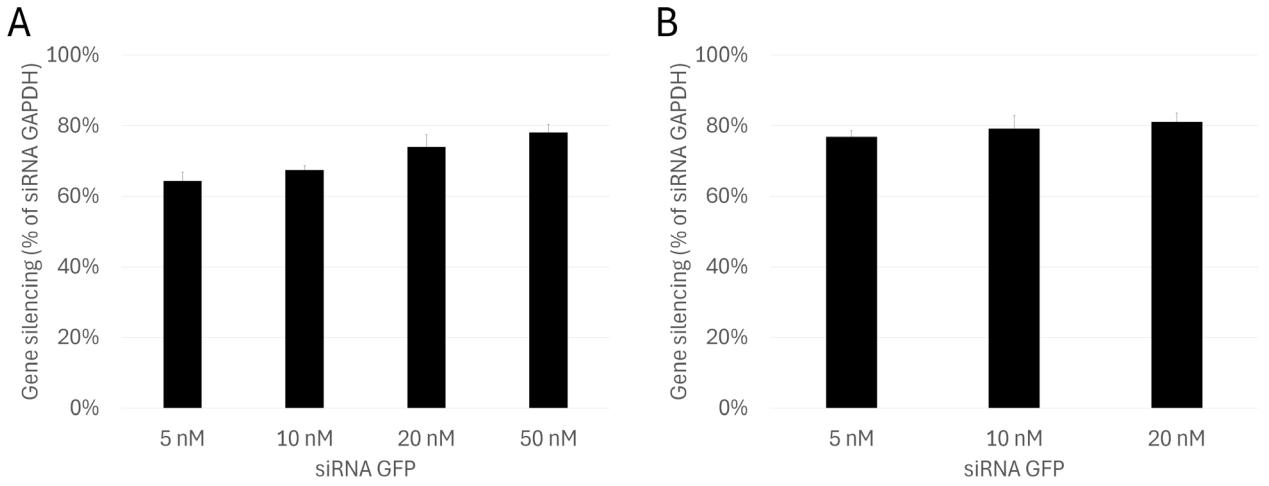

Figure 5a: Efficiency of gene silencing with PolyMag Premium: NIH-3T3 (A) and C2C12 cells (B) expressing GFP were transfected with PolyMag Premium and ranging doses of siRNA-GFP and GAPDH. Gene silencing using siRNA-GFP was measured 72H after and expressed as a % of siRNA-GAPDH.

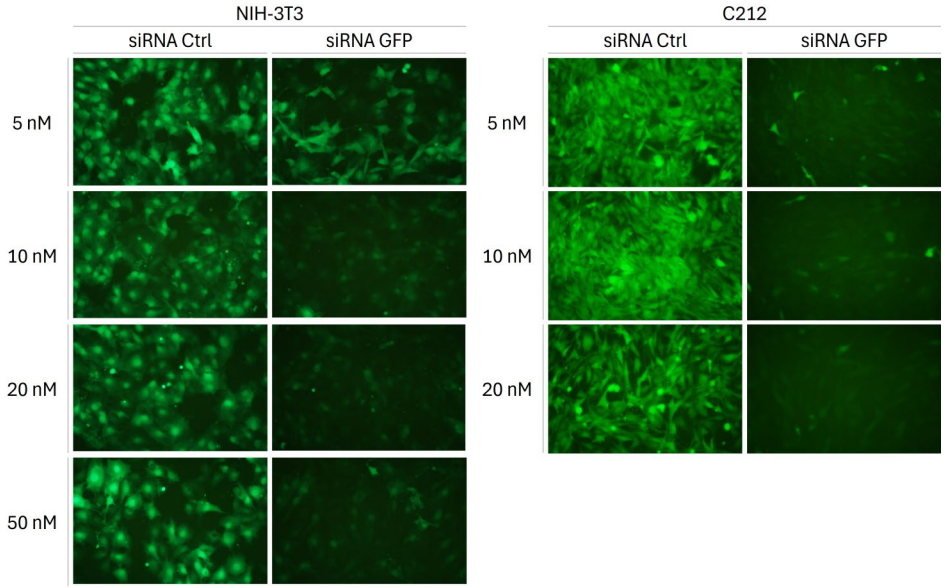

Figure 5b: Efficiency of gene silencing with PolyMag Premium: NIH-3T3 (A) and C2C12 cells (B) expressing GFP were transfected with PolyMag Premium and ranging doses of siRNA-GFP. Gene silencing using siRNA-GFP was monitored 72H after under fluorescence microscopy.

Results show that PolyMag Premium is highly efficient for silencing gene expression using siRNA.