ViroMICST Stem Results.

1. Description

Viro-MICST™ Stem Transduction Enhancer is a new specific magnetic nanoparticles formulation issued from OZ Biosciences Magnetofection™ technology.

Its properties were specifically designed for **Stem Cell lentiviral transduction** in order to achieve high infection rate directly on **magnetic cells sorting devices** (column or magnet).

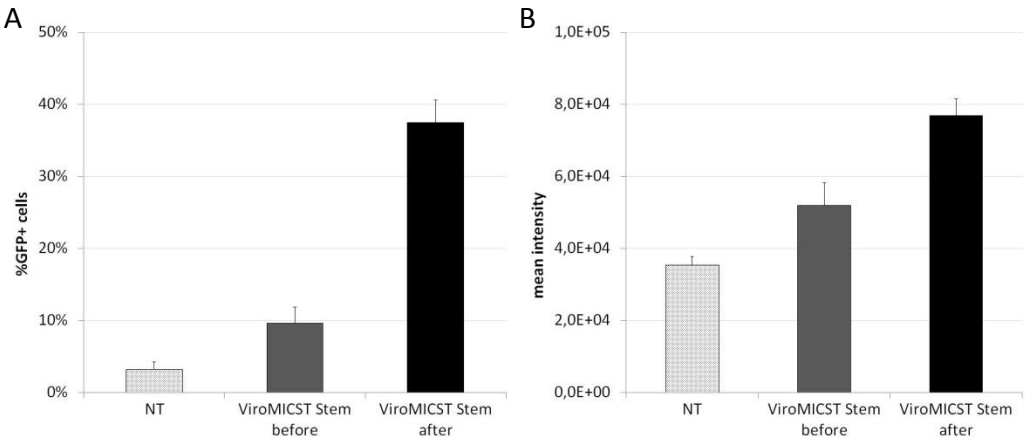
As a stabilized magnetic nanoparticles formulation, ViroMICST Stem offers a simple and reproducible method for **increasing lentiviral infection and transduction** of difficult cell types such as CD34+ hematopoietic stem cells, both cell lines and primary cells, **during cell sorting**. Due to a total biodegradability of the magnetic nanoparticles, ViroMICST Stem is non-toxic and **ideal for CD34+ Hematopoietic Stem Cell** transduction.

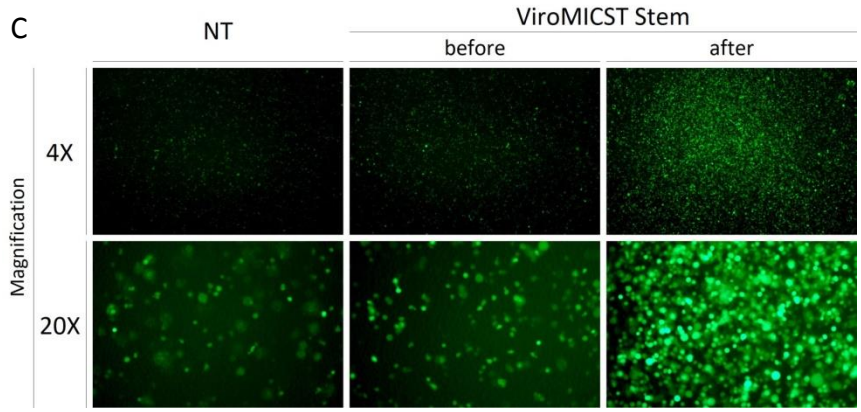
This novel technology combines cell isolation and genetic modification in one simple, efficient and reliable integrated system.

ViroMICST Stem enhances Lentiviral infection during cell sorting.

ViroMICST Stem increases infection and transduction efficiency in CD34+ stem cells on purification columns.

KG1a CD34+ cell lines were labelled with immune magnetic antibodies (not provided by OZ Biosciences) and loaded onto separation column. Lentiviral particles alone (NT) or complexes of ViroMICST Stem and lentivirus (ViroMICST Stem) were added onto the column before or after loading the cells and incubated during 30 min at RT. Cells were then flushed from the column and incubated for 72H. % of GFP positive cells (A) and mean intensity (B) were evaluated by flow cytometry and fluorescence microscopy (C).

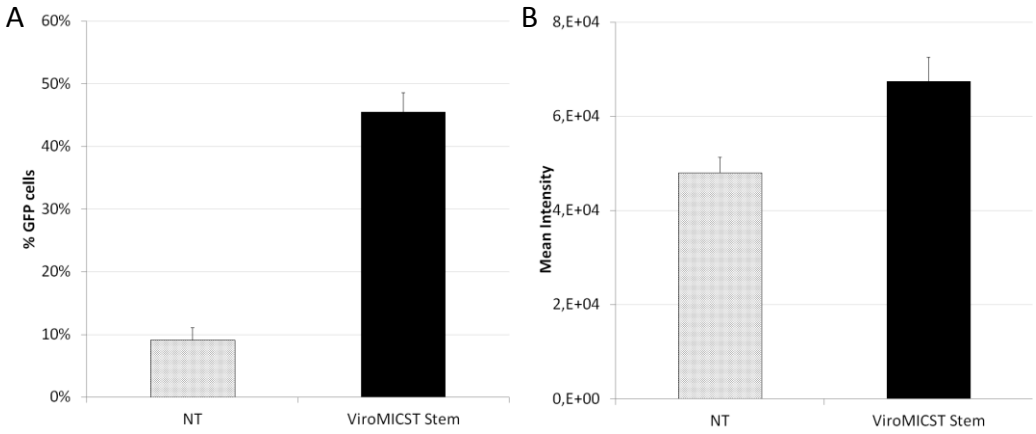


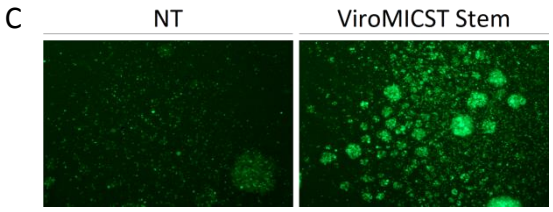


These results demonstrated the specificity of ViroMICST Stem to enhance infection and transduction of CD34+ stem cells on immunomagnetic cell sorting column.

ViroMICST Stem increases infection and transduction efficiency CD34+ stem cells on separation magnet

KG1a CD34+ cell lines were labelled with immune magnetic antibodies (not provided by OZ Biosciences) and mixed with Lentiviral particles alone (NT) or complexed to ViroMICST Stem (ViroMICST Stem). After 30 min incubation at RT onto a cell separation magnet, transduced cells were removed from the magnetic apparatus and incubated under standard culture conditions for 72H. % of GFP positive cells (A) and mean intensity (B) were evaluated by flow cytometry and fluorescence microscopy (C).



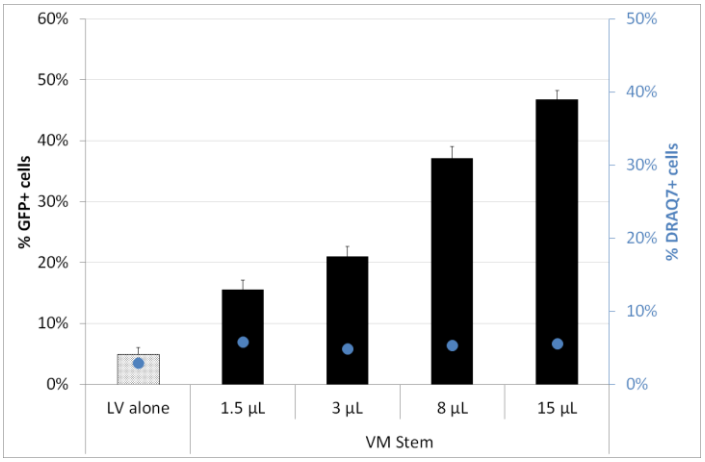


Altogether, these results demonstrated the specificity of ViroMICST Stem to enhance infection and transduction of CD34+ stem cells on immunomagnetic cell sorting column and cell sorting devices.

CD34+ cells viability following ViroMICST Stem-induced transduction

ViroMICST Stem does not impair CD34+ stem cells survival after lentiviral mediated transduction.

KG1a CD34+ cell lines were infected on MS Column at MOI 5 using a HIV-SFFV-GFP lentivirus in presence of ranging doses of ViroMICST Stem WS (VM Stem). 72H after transduction, late apoptosis was measured using non-permeant DRAQ7 nuclear stain; % of GFP+ (bars) and DRAQ7+ (blue squares) cells were determined by flow cytometry.



Results demonstrated that ViroMICST Stem does not induce toxicity after transduction.