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Influence of recombinant histone H1.3 on the efficiency of lentiviral transduction of human cells in vitro

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Abstract

Lentiviral vectors are widely used in genetic modification of human and animal cells (lentiviral transduction) to enhance their therapeutic potential by expression of recombinant protective and trophic factors. Genetic modification of cells in vitro or ex vivo achieves the specificity of viral transduction, as modified are just cells that have been manipulated in the laboratory. In addition, the introduction of genetically modified cells, but not pure virus, helps to avoid introduction of viral particles into the body of the recipient. This approach allows us to control the expression of therapeutic genes, the immunogenicity of viral vectors and viral transduction. To date, different approaches are used to improve the lentiviral transduction (polycations, protamine sulfate, etc.), but these methods suffer from limited efficacy or high toxicity. For the first time we demonstrated that the recombinant histone N1.3 increases the efficiency of lentiviral transduction by more than 2 times and has no toxic effect on target cells in a wide range of concentrations studied.

Keywords

Cytotoxicity, Histone H1.3, Lentiviruses, Retroviruses, Transduction