## ABSTRACT

MEMBRANE-PENETRATING PEPTIDES TO ENHANCE TRANSFECTION AND COMPOSITIONS AND METHODS FOR USING SAME

The present invention is directed to non-naturally occurring peptides containing a membrane-penetrating amino acid sequence and further at least one polycationic moiety or peptide sequence. The peptides are suitable for use in delivery a cargo to the interior of a cell. Suit - able cargo includes nucleic acid molecules (including DNA, RNA or PNA), polypeptides, or other biologically active molecules. The present invention is further directed to transfection complexes containing the non-naturally occurring peptides of the present invention in non-covalent association with at least one cationic lipid and a cargo to be delivered to the interior of a cell. The invention further relates to methods for the preparation and use of the non-naturally occurring peptides for the formation of transfection complexes and the delivery of a cargo to the interior of a cell in culture, an animal or a human. The invention also relates to compositions and kits useful for transfecting cells.

[Fig. 9B]