Enhanced siRNA Delivery Using a Novel Peptide

Tech ID: 19213 / UC Case 2009-213-0

BACKGROUND

siRNA delivery into cells can often times be challenging especially in certain cells such as primary cells and hematopoietic cell lineages. Lipofection reagents which are routinely used for siRNA transfection can result in varying degrees of cytotoxicity. Researchers at UCSD have developed a novel peptide that exhibits a dramatic increase in siRNA delivery and in addition over-comes problems associated with cytotoxicity.

TECHNOLOGY DESCRIPTION

The given technology involves the use of a PTD-DRBD (peptide transduction domain-dsRNA binding protein) fusion peptide. DRBD binds siRNAs with high avidity independent of its sequence and allows PTD-mediated cellular uptake. PTD-DRBD mediated siRNA delivery occurs by a specialized process of macropinocytosis that prevents siRNA escape into the cytoplasm. UCSD researchers have tested this approach in 20+ cell types including human Embryonic Stem Cells, HUVECs, fibroblasts, keratinocytes and hematopoietic lineages and remarkably, siRNA responses were induced in the entire cell population in all 20 cell types in a rapid and non-cytotoxic fashion. In addition, PTD-DRBD siRNA delivery approach has been tested with great success in mouse models.

APPLICATIONS

1) siRNA delivery reagent

2) RNAi basic research

3) Target screening and siRNA therapeutics

RELATED MATERIALS

- Eguchi et al., Efficient siRNA delivery into primary cells by a peptide transduction domain–dsRNA binding domain fusion protein. Nature Biotechnology 27, 567 - 571 (2009) - 06/27/2009
- Eguchi and Dowdy, siRNA delivery using peptide transduction domains. Trends in Pharmacological Sciences, Volume 30, Issue 7, 341-345 (2009) - 06/22/2009

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,260,493	02/16/2016	2009-213

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OTHER INFORMATION

CATEGORIZED AS

- Medical
  - Other

RELATED CASES

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