Presentation on

ONA TRANSFECTION

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CONTENT

INTRODUCTION

- Transfection is a process of inserting DNA or genetic materials into cell's nucleus.
- This typically involves opening transient pores or 'holes' in the cell plasma membrane, to allow uptake of material.
- This is the method of transporting or artificial introducing foreign nucleic acid RNA ,DNA and various macro molecules into an eukaryotic cell by using chemicals , lipids ,physical or biological method.

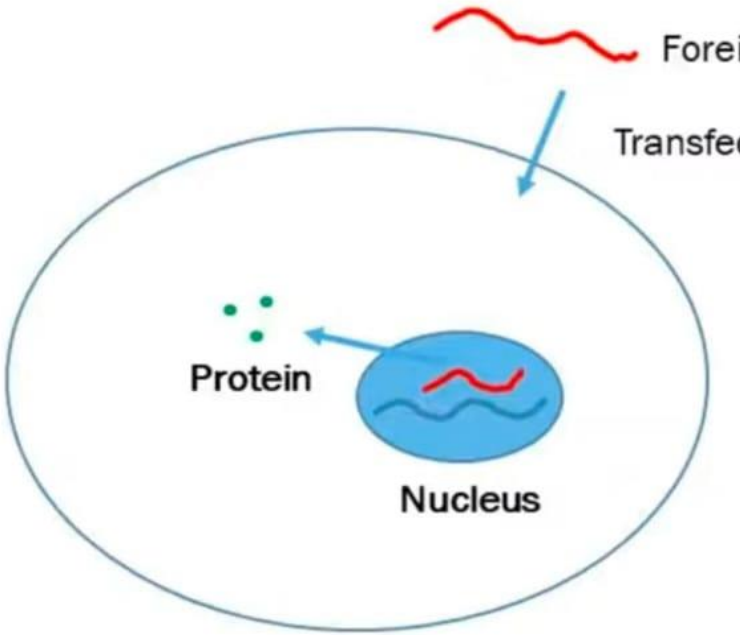
TYPE OF TRANSFECTION

Transient transfection

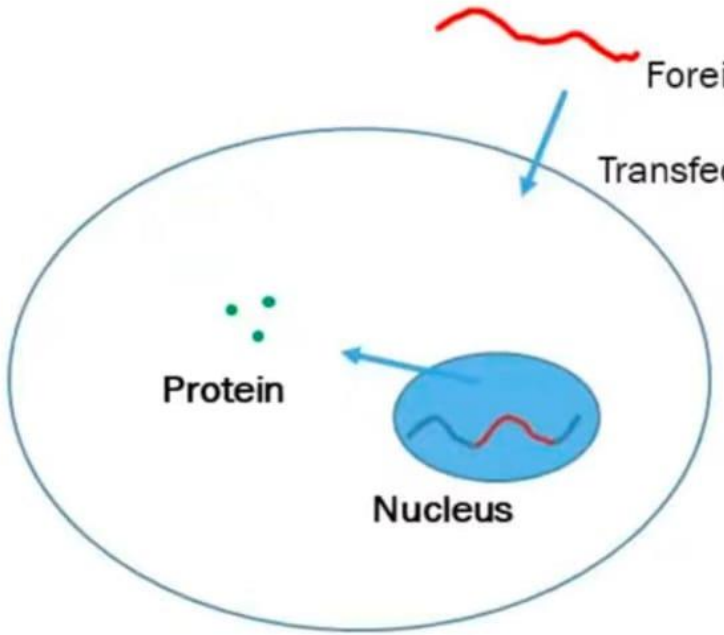
- * Foreign DNA does not integrate into the host genome ,but remain in the nucleus and gene express for a limited period of time (24-96 hrs.)
- * Chemical or electrophoration method
- * Short- term expression
- * No genomic integration
- * Manipulation of specific gene, miRNA activity in cell culture.

Stable transfection

- Cells that have integrated foreign DNA into the genome
- Viral or micro injection based method
- Sustained expression for a long period of time
- Carries the risk of non specific integration
- Useful where Persistent gain of function or loss of function is required and for hard to transfect primary cells or when you need to track the select individual cells
- DNA gets passed on two future generation



Transient Transfection



Stable Transfection

Transformation: delivery of the genetic material inside prokaryotic cell .

Transfection :delivery of the genetic material inside the eukaryotic cells.

PURPOSE OF TRANSFECTION

- Study gene function.
- Study protein function.
- Transfer DNA into embryonic stem cells (help embryonic stem cells to grow develop and fully function individuals).

FACTORS AFFECTING DNA TRANSFECTION

Factors affecting DNA transfection

- 1.cell type
- 2.Quality or quantity of DNA
- 3.transfection method
- 4.cell health
- 5.Reagent used

METHODS OF TRANSFECTION

Physical Methods:

Electroporation: Using electrical pulses to create temporary pores in the cell membrane.

Microinjection: Directly injecting DNA into the cell nucleus.

Gene Gun (Biolistic): Bombarding cells with DNA-coated particles.

Chemical Methods:

Calcium Phosphate: Forming precipitates with DNA for cellular uptake.

Lipofection: Using cationic lipids (liposomes) to complex with DNA and deliver it into cells.

Cationic Polymers/Dendrimers: Using positively charged

THANKYOU