Vectors

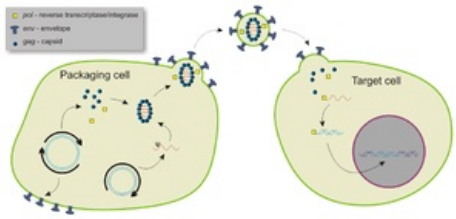
Vector in molecular biology means a molecule of DNA, which serves as a carrier of genetic information into the cells. It is used especially in molecular genetic. Generally it is consisting of inserted DNA sequence and larger DNA sequence which serves as a supporting structure. The most common vectors are plasmids, viruses and artificial chromosomes.

Vectors are used especially to transfer of genetic information into the cells in order to replication and expression of the selected part of DNA. Whole process is induced by **promoter** which is also contained in vector DNA.

Inserting vector into cells is called due to target cell: **transformation** (for bacterial cells), **transfection** (for eukaryote), **transduction** (for viruses).

Plasmids

Plasmids are molecules with double-stranded circular DNA structure. Their transfer into cell is connected with translation into mRNA and transcription into proteins. They carry the inserted gene and the necessary enzymes and control molecules. Most often they are applied to bacteria that are cultivated on soils for hundreds and thousands of copies. Vectors can then be removed from the bacteria using restriction enzymes and get the individual parts of DNA.



Lentiviral vector

Viral vectors

Viral vectors are often artificially constructed and contain modified DNA or RNA. Their treatment is shedding its own infectivity but retain the ability to penetrate and propagate in the cell. It infectivity deprivation can sometimes lead to the need for co-operation with another virus. It is necessary for successfully transfection. Viral vectors are often incorporates into the host genome. Most common are retroviruses. However, there are some security concerns in debilitated individuals in connection with the possibility of secondary manifestations of infective virus.

Links

Related articles

- Gene Therapy

Bibliography

- ALBERTS, B – BRAY, D – JOHNSON, A,. *Základy buněčné biologie.* 2. vydání edition. 2005. ISBN 80-902906-2-0.