

* Competence

* Transformation may be natural or artificial.

* Natural transformation is a very rare event and has been observed in both gram positive (<u>Streptococcus pneumoniae, Bacillus subtilis</u>) as well as in gram negative (<u>Haemophilus influenzae</u>)

* The ability of recipient bacteria to take up free DNA and become transformed is known as competence.

* Some species of bacteria are naturally competent.

* Transformation can occur at high frequency since most cells in a population can take up environmental DNA at any time.

* Competent bacteria that can take up DNA encode proteins called competence factors.

* These proteins facilitate the binding of DNA fragments to cell surface and uptake of DNA into the cytoplasm.

* Transformation in Haemophilus influenzae the first gram negative bacteria in which natural competence was found.

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* In Haemophilus influenzae DNA uptake is associated with the formation of a small membranous structure called transformosome which protrudes outside the cell.

* The transforming DNA is taken into these vesicles where it is internalised into the cell.

* DNA uptake in Haemophilus influenzae appears to require specific sequence termed