



FACULTY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY

GENE CLONING CONCEPT-AND BASIC STEPS

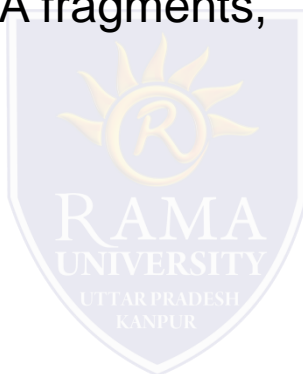
- The term cloning used to describe the production of **genetically identical copies** of an organism by **asexual means**.
- For example the propagation of plants from cuttings.
- In animals, the term 'clone' applied to offspring produced by the process of nuclear transfer.
- Cloning is the introduction of a DNA fragment into a vector, which makes it possible to increase this DNA to an abundant quantity.



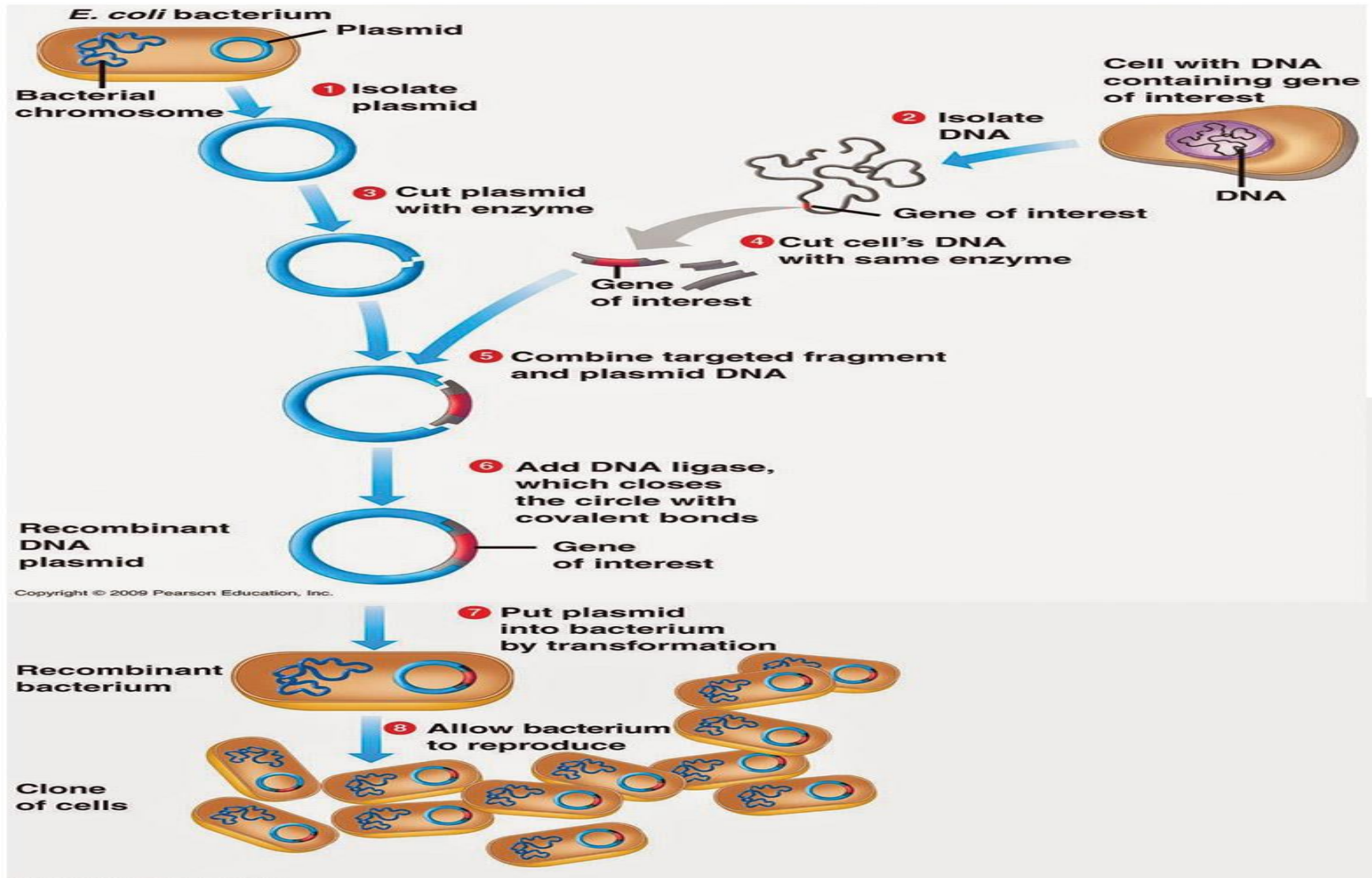
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➤ Cloning process involves

1. Digestion of vector and DNA fragments,
2. Purification
3. ligation with one another,
4. Transformation
5. Selection



GENE CLONING CONCEPT-AND BASIC STEPS



Genetic recombination technology consists of the breakage and joining of DNA molecules.

Genetically engineered DNA prepared by transplanting or splicing genes from one species into the cells of a host organism of a different species. Such DNA becomes part of the host's genetic makeup and is replicated.

Genetic engineering primarily involves the manipulation of genetic material (DNA) to achieve the desired goal in a pre-determined way.

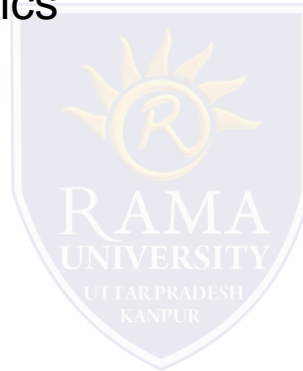
- Manipulation and alteration of genes

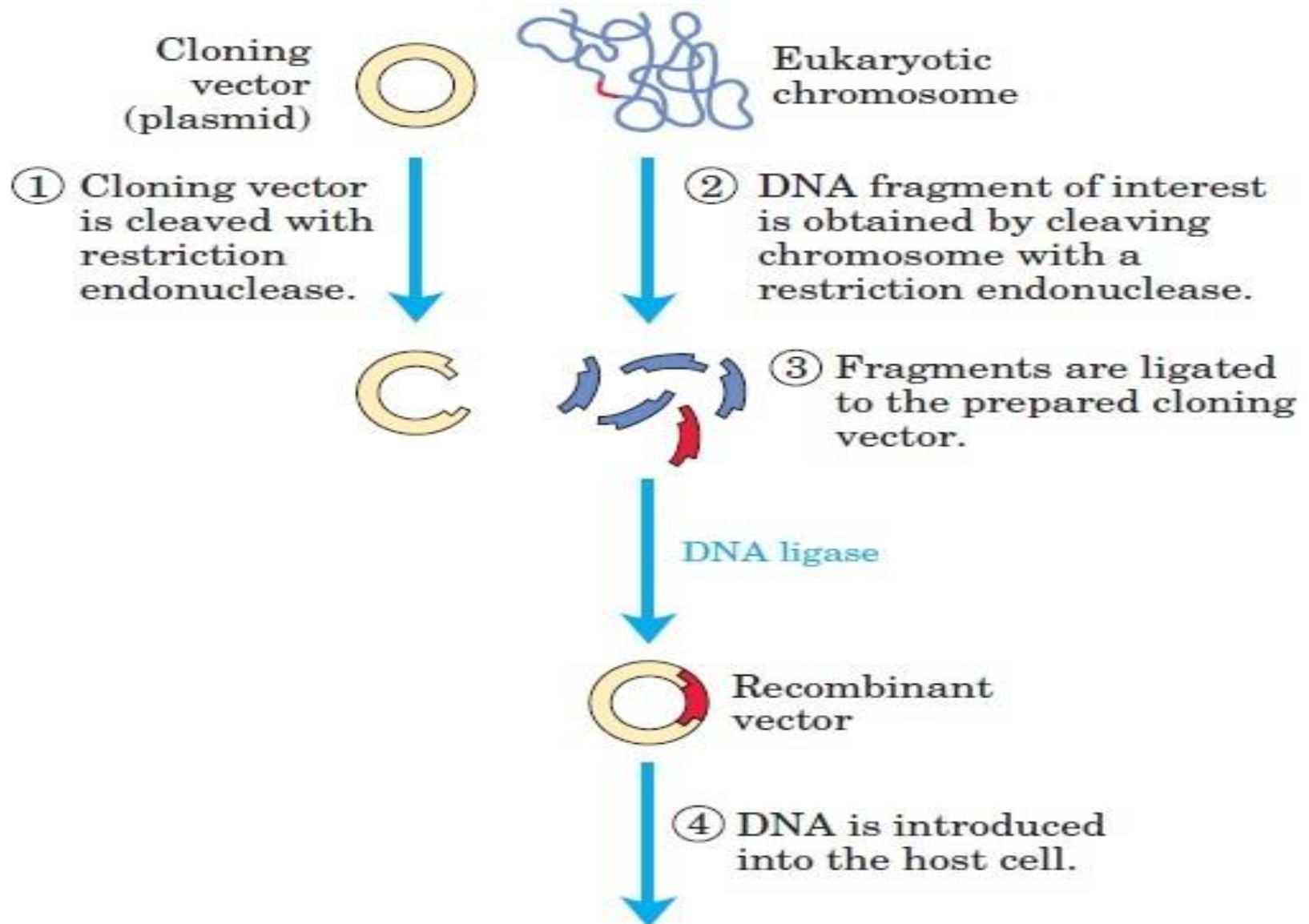
Artificially copying a piece of DNA from one organism and joining this copy of DNA into the DNA of another organism

- **Other terms** – Recombinant DNA technology

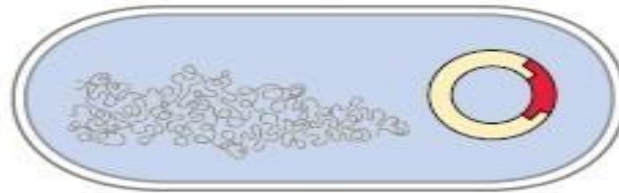
Gene manipulation Gene cloning

Genetic modifications New genetics





④ DNA is introduced into the host cell.



⑤ Propagation (cloning) produces many copies of recombinant DNA.

