

NAME :- VISHAKHA VINAYAK DAVRUNG.
DEPARTMENT OF BIOCHEMISTRY
PRN -2018420336



Recombinant DNA Technology

Introduction to recombinant DNA Technology

- Recombinant DNA technology involves the **joining of DNA molecules from two different sources** and **insertion** into a host organism to produce new genetic combinations that are of **value to science, medicine, agriculture and industry**.
- Usually done independent of the natural reproductive process
- The **result is so called Genetically Modified Organism (GMO)**
- Done by **precision engineering of the DNA molecule known as genetic engineering**.
- Encompasses a number of molecular biological techniques

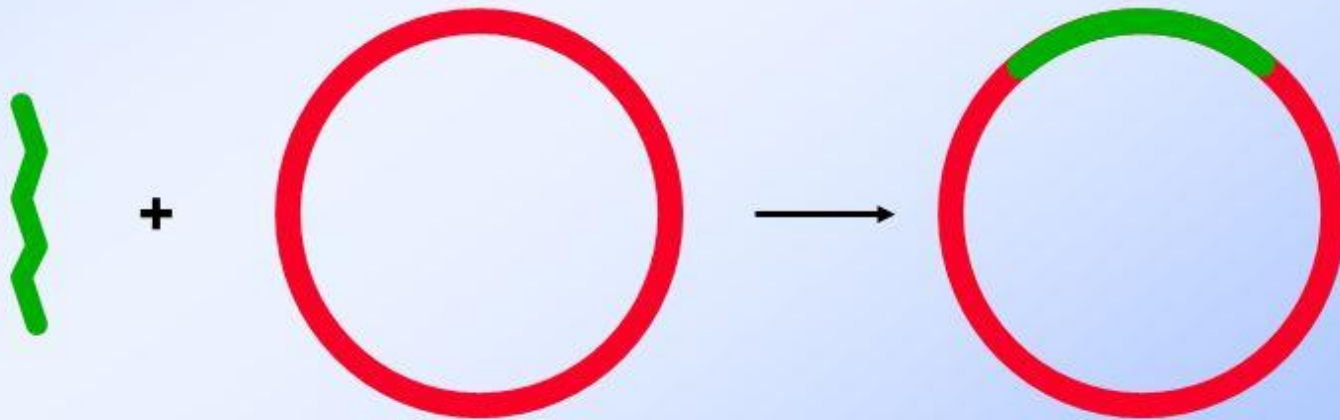
Definition of recombinant DNA

- Production of a unique DNA molecule by joining together two or more DNA fragments not normally associated with each other
- DNA fragments are usually derived from different biological sources

Recombinant DNA

DNA recombination or molecular cloning

Covalent insertion of a DNA fragment from one cell or organism into the replicating DNA of another.



Cloning or expression
vector (plasmid)

Eukaryotic chromosome



Digestion with restriction
endonucleases



DNA fragment
containing gene
of interest

Ligation



Recombinant plasmids

APPLICATIONS OF RECOMBINANT DNA TECHNOLOGY

- Recombinant DNA technology has a wide range of application in industries, medical science, and agriculture as well as molecular biology.
 - Molecular diagnosis of diseases
 - Gene therapy
 - DNA finger printing
 - Production of vaccines
 - Commercial and pharmaceutical products



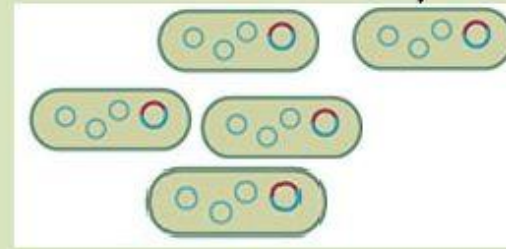
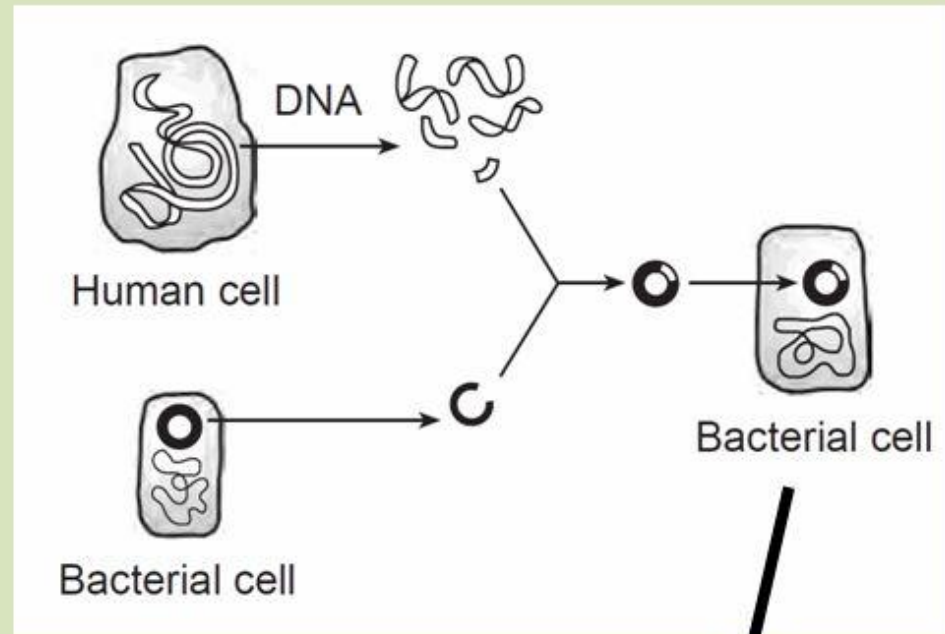
Why Use Recombinant DNA Technology?

- To find practical applications to improve human health and molecule production
- Examples include:
 - Making gene products using Genetic Engineering
 - Uses in basic research
 - Medical uses → diagnosis of disease
 - Making vaccines/antibiotics and other pharmaceutical products
 - Forensic uses of DNA such as DNA fingerprinting
 - Agricultural uses such making transgenic plants
 - Foods
 - Vitamins
 - Biodegradation

Benefits of recombinant DNA:

1. Fast and cheap production of human hormones such as insulin and human growth hormone

- ✓ If person has diabetes, and needs insulin, what if be better if he used insulin from a cow or insulin from recombinant DNA using HIS insulin gene? Why? Insulin from recombinant DNA using his insulin gene! **Would be less likely to be rejected by the person**



BIBLIOGRAPHY AND REFERENCE

- <https://users.rcn.com/jkimball.na.ultranet/biology/Pages/R/RecombanantDNA.html#kanamycin>
- BIOLOGY: CONCEPTS AND CONNECTION

THANK

YOU!