



محاضرة رقم: 10

¹ Lecture No 10:

Practical

Advanced laboratory technique

RECOMBINANT DNA TECHNOLOGY

Sawa University

College of health and medical techniques

Department of Medical Laboratories

. Stage third

جامعة ساوة الاهلية

كلية التقنيات الصحية والطبية

قسم تقنيات المختبرات الطبية

المرحلة / الثالثة

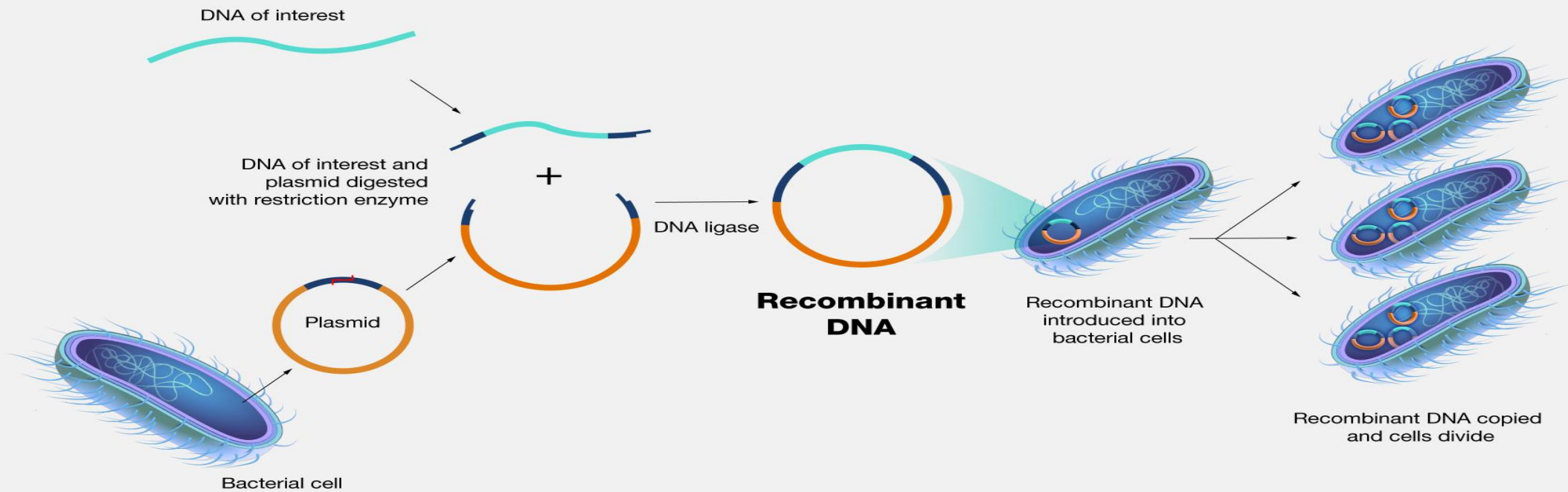
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Recombinant DNA technology

Recombinant DNA technology involves the use of specific enzymes and laboratory techniques to manipulate, cut, and isolate DNA segments of interest. This process allows scientists to combine (splice) DNA from different species or to design genes with new or improved functions.

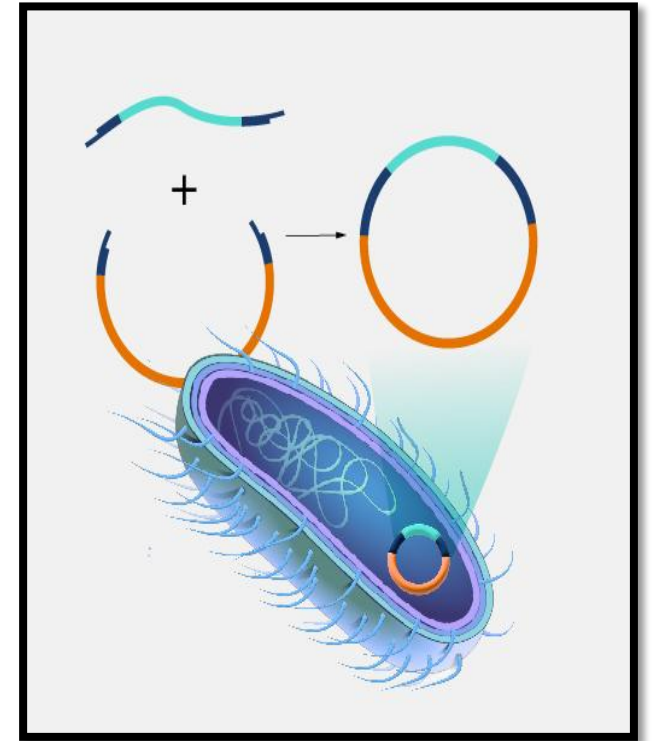
In this technique, **DNA molecules taken from different sources are chemically joined together**. For example, a gene from an animal can be inserted and recombined with bacterial DNA to produce a functional recombinant molecule.

Recombinant DNA technology



Basic Steps

1. Identify the target gene
2. Cut DNA using **restriction enzymes**
3. Ligate DNA into **vectors (plasmids)**
4. Insert recombinant DNA into host cells
5. Gene expression and analysis



Tools Used in Recombinant DNA Technology

Restriction enzymes – cut DNA

Ligase – joins DNA fragments

Vectors (plasmids) – transfer genes

Applications of Recombinant DNA Technology

- .Production of medicines and therapeutics** such as insulin, growth hormones, and antibodies.
- .Development of improved crops** resistant to pests and diseases.
- .Enhancement of nutritional traits** in plants, e.g., increasing vitamin content.
- .Production of industrial enzymes** used in food, detergents, and biotechnology.
- .Use in genetic research** for studying genes and genetic modification.

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1. What is the role of **restriction enzymes** in DNA manipulation?
 2. Give **two examples** of applications of recombinant DNA in medicine?
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Any questions?

*Thank
You*