IMMUNOBLOTTING

IMMUNOBLOTTING TECHNIQUE:-

Immunoblotting techniques use antibodies (or other specific ligands in related techniques) to identify target proteins among a no of unrelated protein species. They involve identification of protein target via antigen-antibody (or protein ligand) specific reactions.

ELISA:-

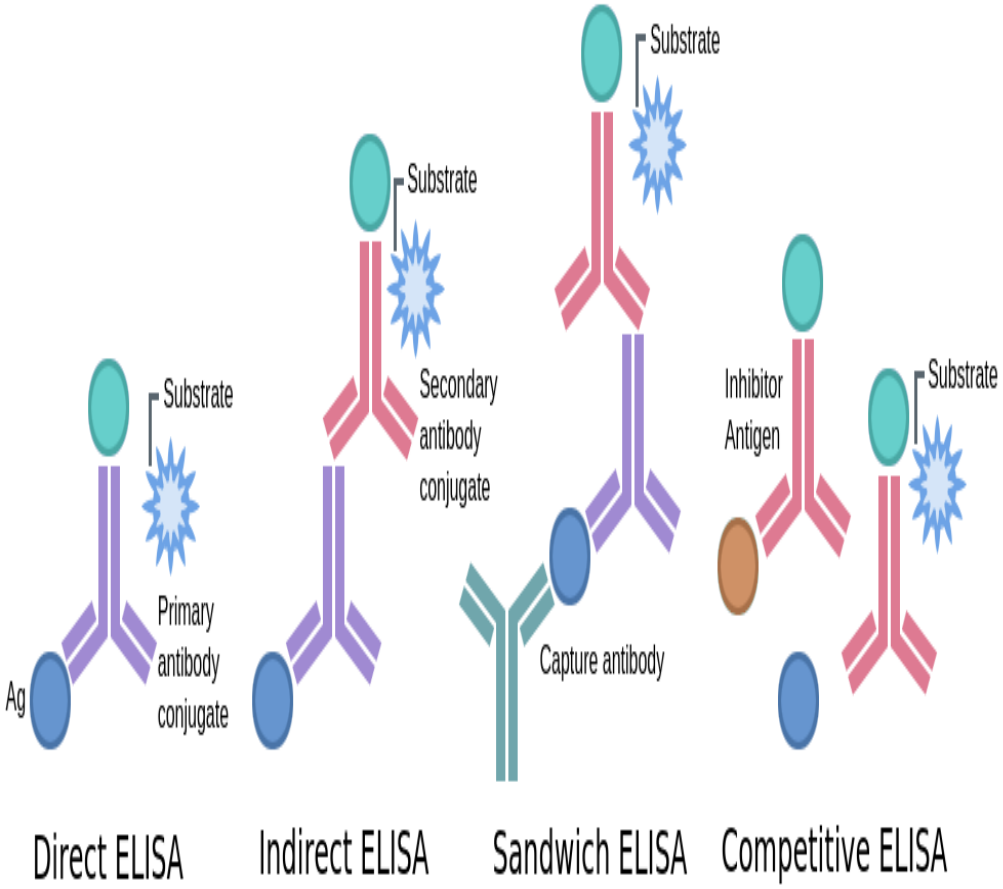
ELISA stands for Enzyme-Linked immunosorbent assay.

This is a rapid immunochemical test that involves an enzyme (a protein that catalyzes a biochemical reaction)

It also involves an antibody or antigen (immunologic molecules)

ELISA test are utilized to detect substances that have antigenic properties, primarily proteins (as opposed to small molecules and ions such as glucose and potassium.

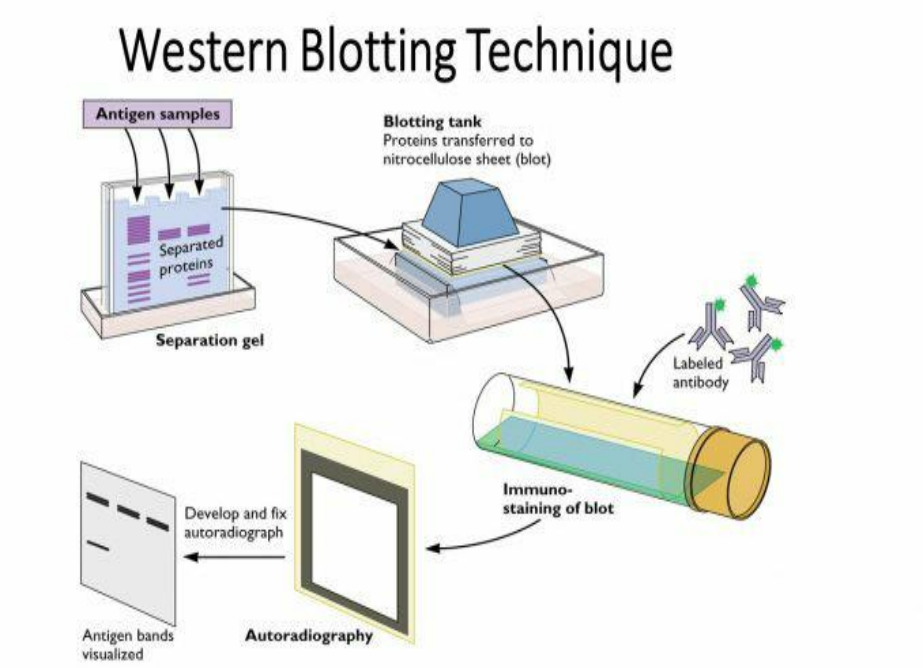
Some of these include hormone bacterial antigen and antibodies



WESTERN BLOTTING: - Western blot is often used in research to separate and identify proteins.

In this technique a mixture of proteins is separated based on molecular weight, and thus by type, through gel electrophoresis.

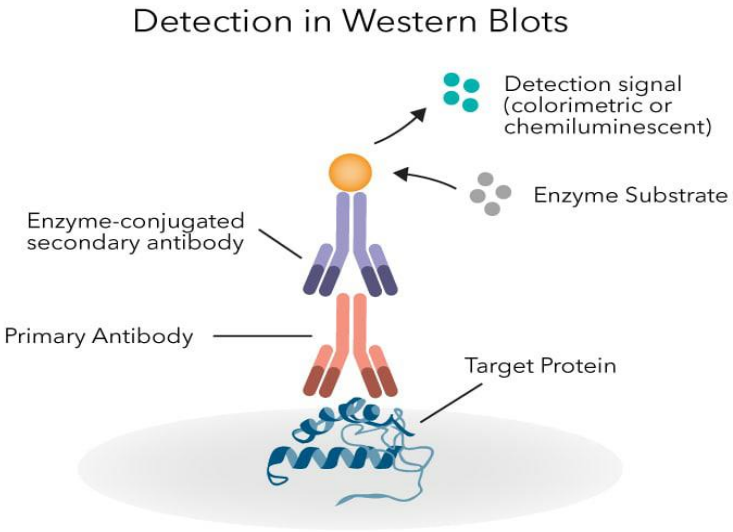
These results are then transferred to a membrane producing a band for each protein. The membrane is then incubated with labels antibodies specific to the protein of interest.



Western blotting is based on the principles of immune chromatography where proteins were separated into poly acrylamide gel according to the Iso electric point and molecular weight

A technique for detecting specific proteins separated by electrophoresis by use of labeled antibodies

Immunoblotting is performed chiefly in diagnostic laboratories to identify the desirable protein antigen in complex



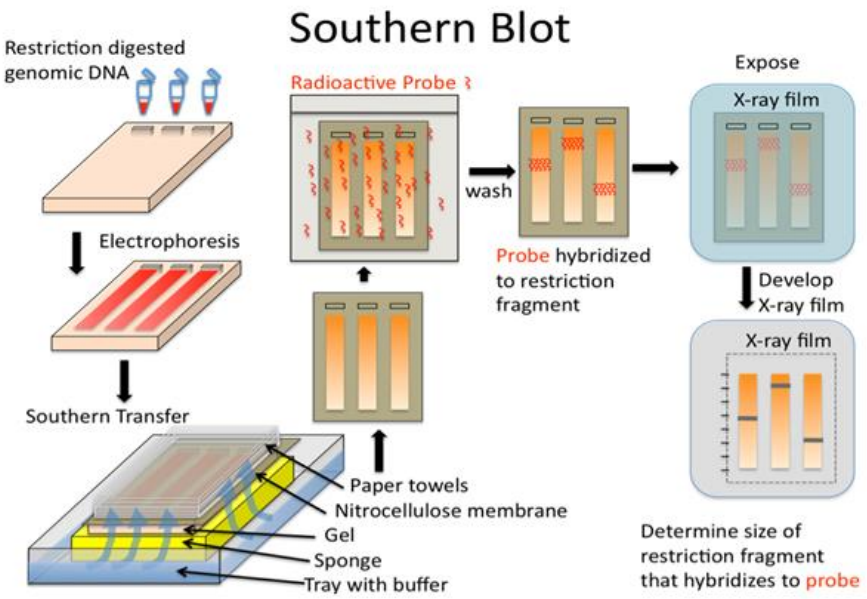
SOUTHERN BLOTTING:-

Southern blotting is a laboratory technique used to detect a specific DNA sequence in a blood or tissue sample. A restriction enzyme is used to cut a sample of DNA into fragment that is separated using gel electrophoresis.

The DNA fragments are transferred out of the gel to the surface of a membrane.

The membrane is exposed to a DNA probe labeled with a radioactive or chemical tag.

If the probe binds to the membrane, then the probe sequence is present in the sample



APPLICATION:-

To identify specific DNA in a sample

To isolate desired DNA for construction of rDNA

Identify mutations, and gene rearrangements

Used in prognosis of cancer and in prenatal diagnosis of genetic disease

Diagnosis of HIV-1 and infectious disease

REFRENCE:-

Immunoblotting

1. https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/immunoblotting
2. https://pubmed.ncbi.nlm.nih.gov/15596900/

Microbial genetics

1. https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/microbial-genetics

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MICROBIAL GENETICS

MICROBIAL GENETICS:-

Microbial genetics is a subject area within microbiology and genetic engineering.

Microbial genetics studies microorganisms for different purposes. The microorganisms that are observed are bacteria, and archaea. Some fungi and protozoa are also subjects used to study in this field.

The studies of microorganisms involve studies of genotype and expression system. Genotypes are the inherited compositions of an organism. (Austin, "Genotype," n,d) Genetic Engineering is a field of work and study within microbial genetics.

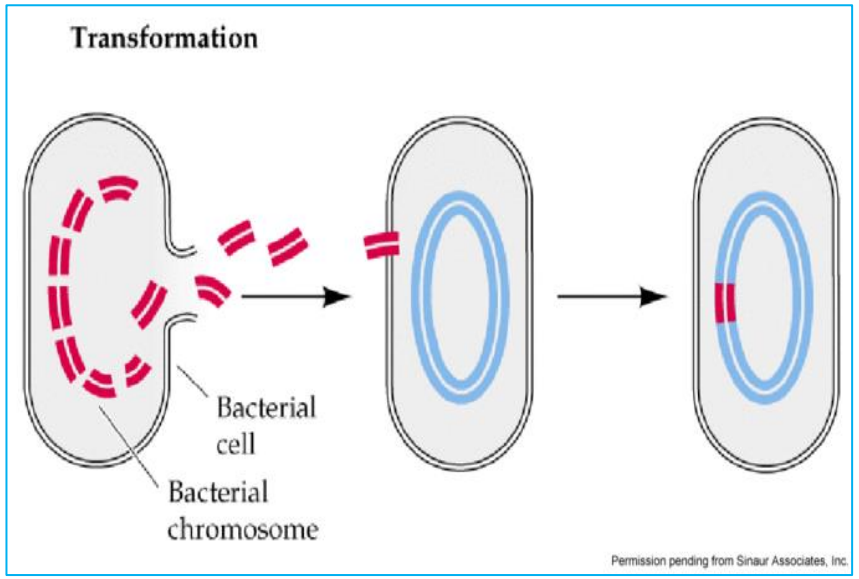
The usage of recombinant DNA technology is a process of this work. The process involves creating recombinant DNA molecules through manipulating a DNA sequence. That DNA created is then in contact with a host organism.

Cloning is also an example of genetic engineering

TRANSFORMATION:-

Transformation is a method of genetic recombination in which a naked DNA from a donor bacteria is transferred to a competent recipient bacteria and incorporated into chromosome of the latter, e.g. in bacillus haemophilus,

Bacterial transformation is a process of horizontal gene transfer by which some bacteria take up foreign genetic material (naked DNA) from the environment. It was first reported in Streptococcus pneumoniae by Griffith in 1928.

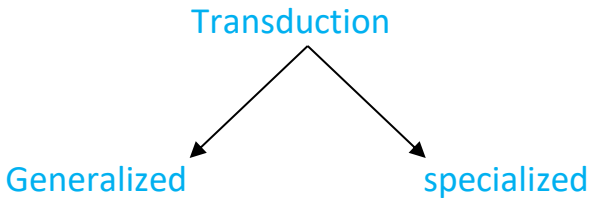


TRANSDUCTION:-

Transduction is the process by which foreign DNA is introduced into a cell by a virus or viral vector. An example is the viral transfer of DNA from one bacterium to another.

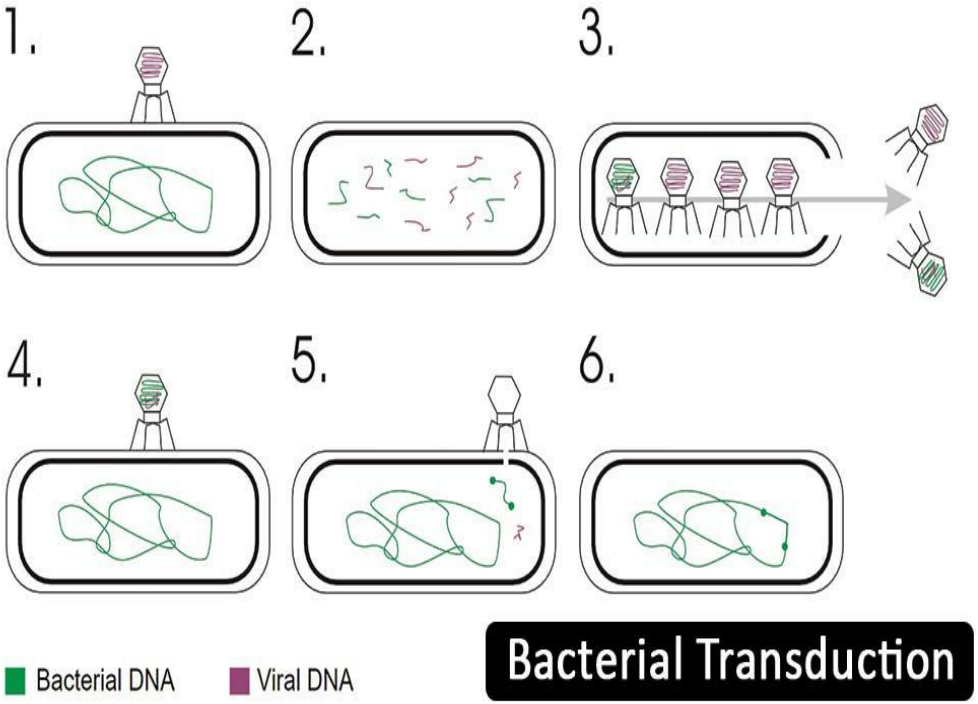
TYPES:-

There are two types:-



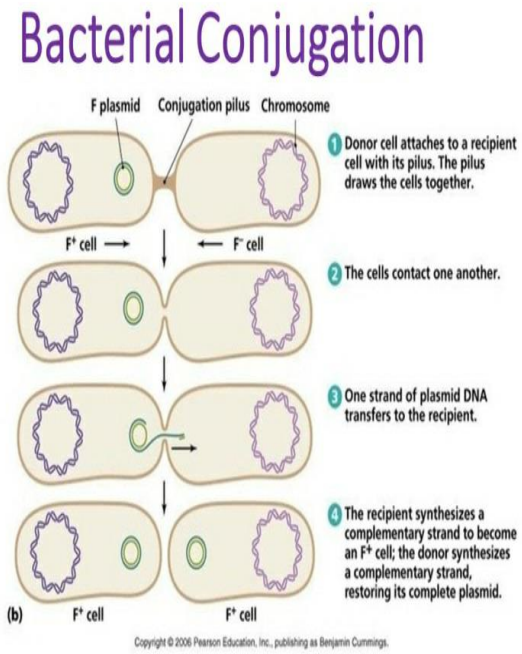
Generalised:- Generalized transduction is the process by which any bacterial gene may be transferred to another bacterium via a bacteriophage, and typically carries only bacterial DNA and no viral DNA

Specialized :- Specialized transduction is the process by which a restricted set of bacterial genes is transferred to another bacterium.



CONJUGATION: -

Conjugation is the process by which one bacterium transfers genetic material to another through direct contact. During conjugation, one bacterium serves as the donor of the genetic material.

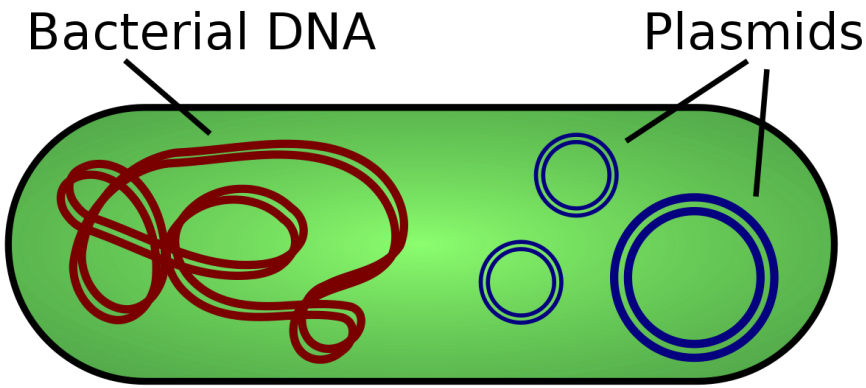


PLASMID:-

A plasmid is a small, circular, double-stranded DNA molecule that is distinct from a cell's chromosomal DNA.

Plasmids naturally exist in bacterial cells, and they also occur in some eukaryotes.

Plasmids have a wide range of lengths, from roughly one thousand DNA base pairs to hundreds of thousands of base pairs.



Transposons:-

Transposons are a group of mobile genetic elements that are defined as a DNA sequence.

Transposons can jump into different places of the genome; for this reason, they are called jumping genes.

However, some transposons are always kept at the insertion site in the genome.

Most transposons are inactivated and as a result, cannot move.

Transposons are divided into two main groups:

- retrotransposons (class I)
- DNA transposons (class II).