

DNA Probes

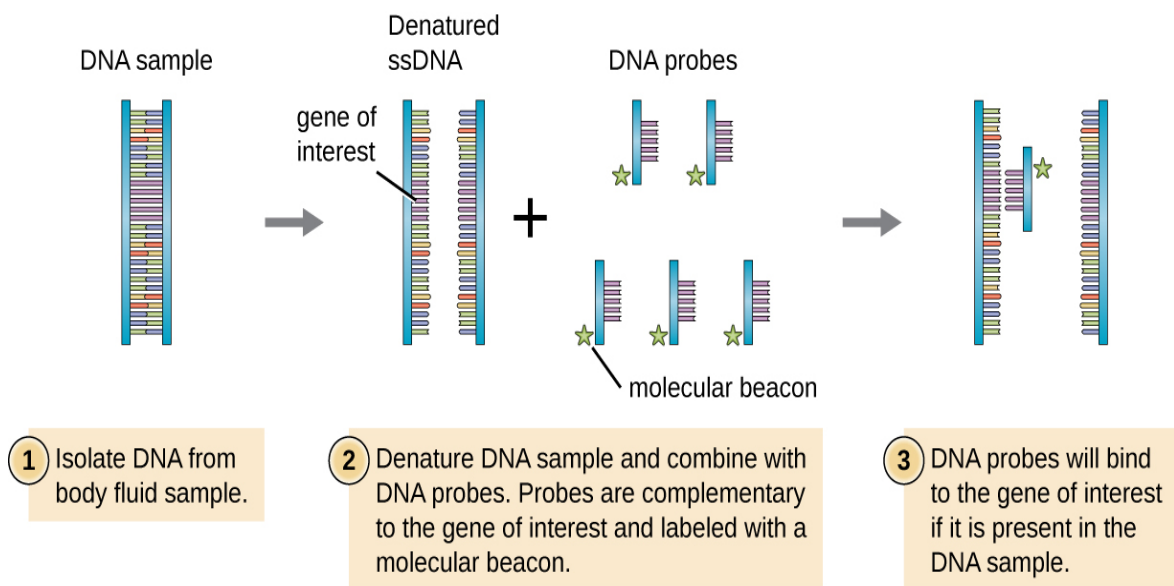
Definition: A short segment of DNA that is complementary to a portion of the desired DNA fragment, which is labelled with a radioactive molecule is called DNA probe.

A DNA probe is a short length of single stranded DNA that has a complementary base sequence to the gene you want to extract.

The probe is labelled with nucleotides containing an isotope of phosphorous (P^{32}) which emits beta radiation.

When the probe is mixed with DNA fragments, it forms hydrogen bonds with DNA complementary sequence.

Hybridization of DNA probe with target DNA



DNA probes can be powerful tools for the diagnosis of human disease, genetic diseases, acquired diseases, and infectious diseases.

Application of DNA probes are used to detect specific sequences of target DNA or RNA from a mixture. Other uses are given below:

1. Isolation of genes
2. DNA fingerprinting
3. Identification of criminals
4. In situ hybridization of locating sequences on chromosomes
5. Understanding evolutionary relationship between species.
6. Identification of rDNA
7. Identification of parental relationships

Organisms causing the following diseases can be tested in drinking water:

1. Tetanus
2. Trichinosis
3. Cholera
4. Malaria
5. Bacillary dysentery
6. Polio mellitus
7. Hepatitis
8. Coxsackie virus and
9. Enteric Cytopathic Human Orphan (ECHO) virus.