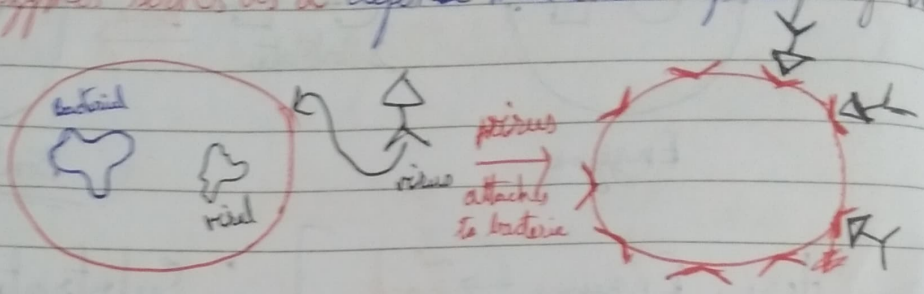
Restriction Enzymes :-

Bacteria are prokaryotes (lack well defined nucleus) but has its own DNA and are found in nucleoid (not enclosed by any membrane)

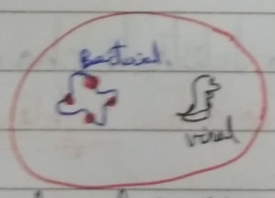
It also has special enzymes called Restriction Enzymes
These enzymes serves as a defence mechanism against foreign DNA



Viruses have its own DNA and attaches themselves to the surface of the victim cell

1st Step :- The ⌒ → locks on the surface of bacteria
Ψ → keys to those locks
The matching shape of the key in viruses enables it to inject its viral DNA onto the bacteria

2nd Step :- To destroy this viral DNA, it first labels its own DNA with methyl groups



• → methyl groups

The bacterial DNA gets methylated with the help of an enzyme called methylase.

It enables bacteria to recognise any DNA that is methylated (bacterial DNA) and non-methylated (viral DNA)

3rd Step:- This process of recognising methylated & non-methylated is done by enzymes called Restriction Enzymes

Bacteria's Restriction enzymes cut DNA at specific sequences but they don't cut their own DNA because it's methylated

Therefore, any unmethylated DNA (viral DNA) gets cut and degraded till its destroyed.

By this process/system, bacteria's genetic material is protected while destroying foreign DNA.

Restriction Enzymes are called Molecular Scissors

Every restriction enzyme recognises a specific/unique sequence and makes a cut at the same specific point.