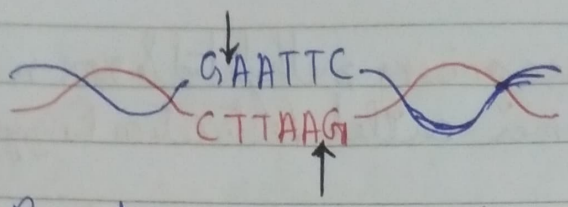
- E. coli :- It is an ~~bacteria~~ bacteria commonly found in intestines of humans.

The ~~enzyme~~ restriction enzyme here is EcoRI
Source :- E. coli RY13 strain

In EcoRI :- • Eco → refers to Ecoli (Escherichia coli)
• R → RY13 strain (in this case) but refers to strain in DNA)
• I → indicates first strain in this ~~strain~~ enzyme

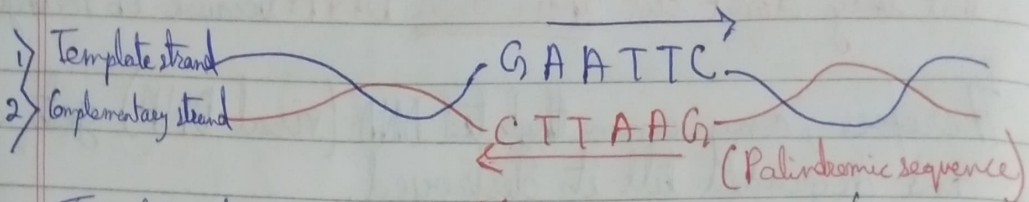
EcoRI is used for DNA slicing at GAATTC or CTTAAG sequence and useful for genetic engineering & cloning.

EcoRI is a Type II restriction enzyme.
Type II restriction enzymes specialize in recognising palindromic DNA sequences and can cut DNA at or near those sites.

DNA :- 

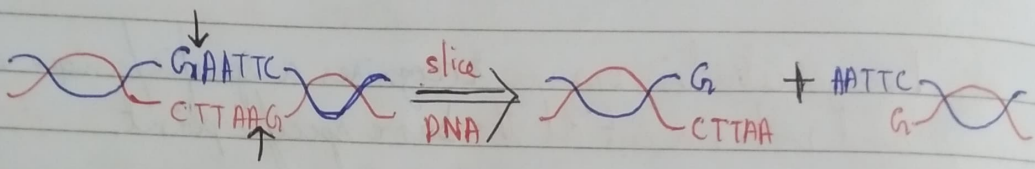
(DNA slicing takes place
Let "GAA & A" on both strands)

Remember, DNA has 2 strands running in it

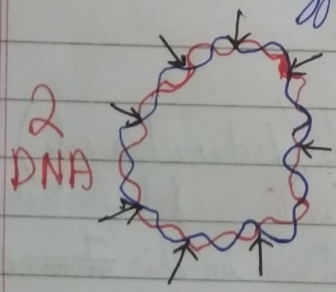


Template strand → Original strand & serves to guide/build complementary strand
Complementary strand → Complement of original (by base-pairing rules)

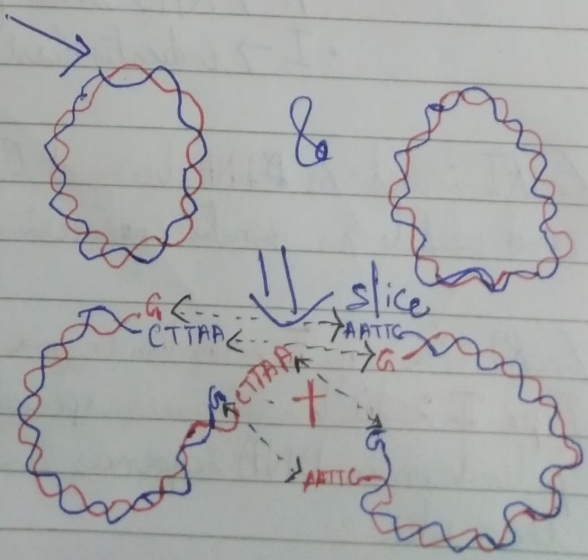
- A pairs with T (vise versa)
- C pairs with G (vise versa)



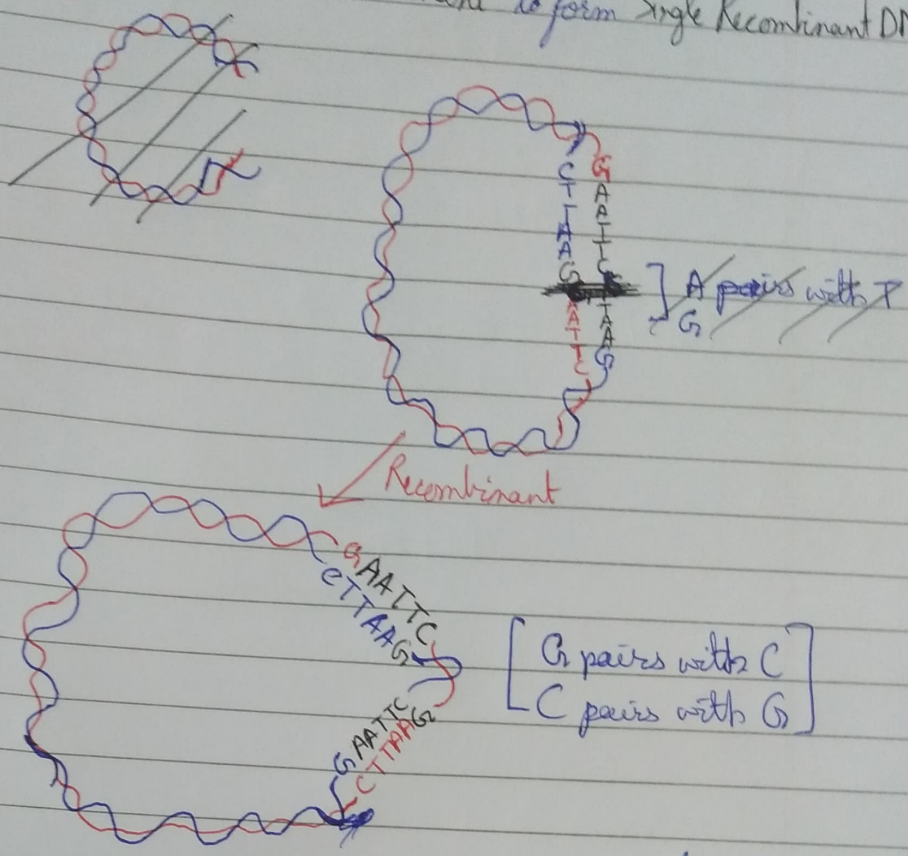
This DNA slicing takes place in unmethylated DNA
If the foreign DNA that invades E.coli is GAATTC,
Then the EcoRI enzyme recognises this sequence & cuts it.



This DNA sequence GAATTC gets cut in these regions



The sticky ends then recombinant to form Single Recombinant DNA



This Recombinant leads to foreign DNA ~~to be unable to~~ looses its :-

- Functionity
- Replication Capability
- Genetic Integrity

Now, this recombinant DNA molecule

↓

Fragmentation of DNA (by Restriction enzyme)

↓

Degration of those fragment (by nucleus)

Summary :-

After recombination, fragmented foreign DNA is sliced and degraded by restriction enzymes. Then, further degradation by nucleus Bacterial repair mechanisms play a role in recognising and destroying foreign or damaged DNA.