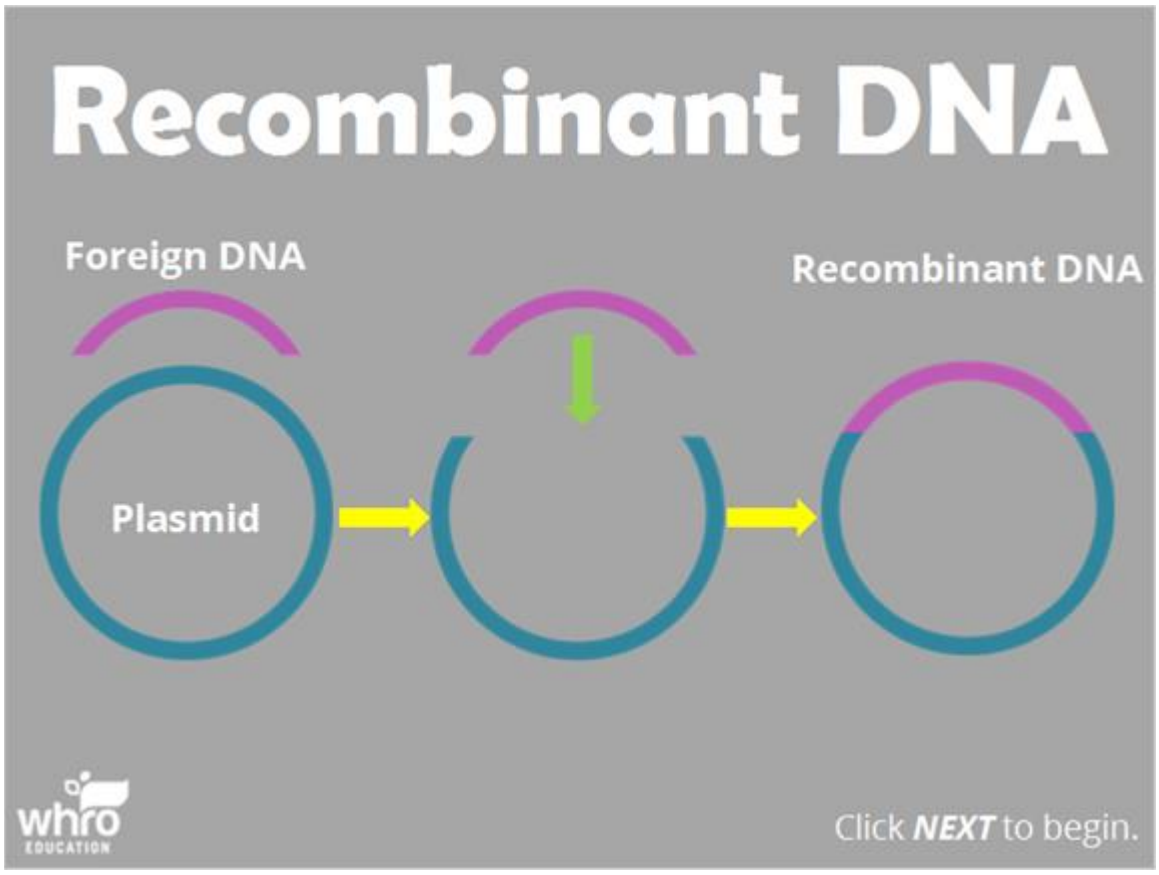
Module 6: DNA, RNA, and Molecular Genetics
Topic 5 Content: Recombinant DNA Notes



Recombinant DNA

Click ***NEXT*** to begin.

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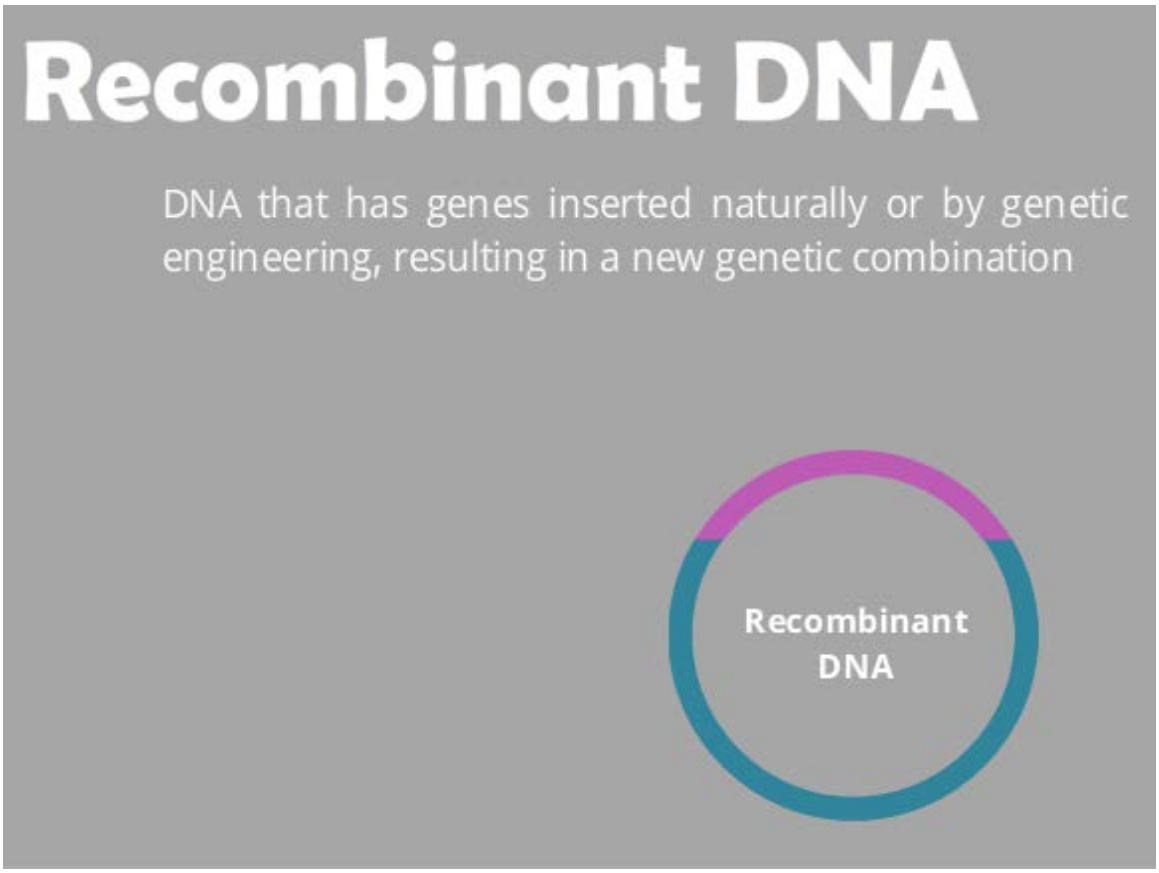
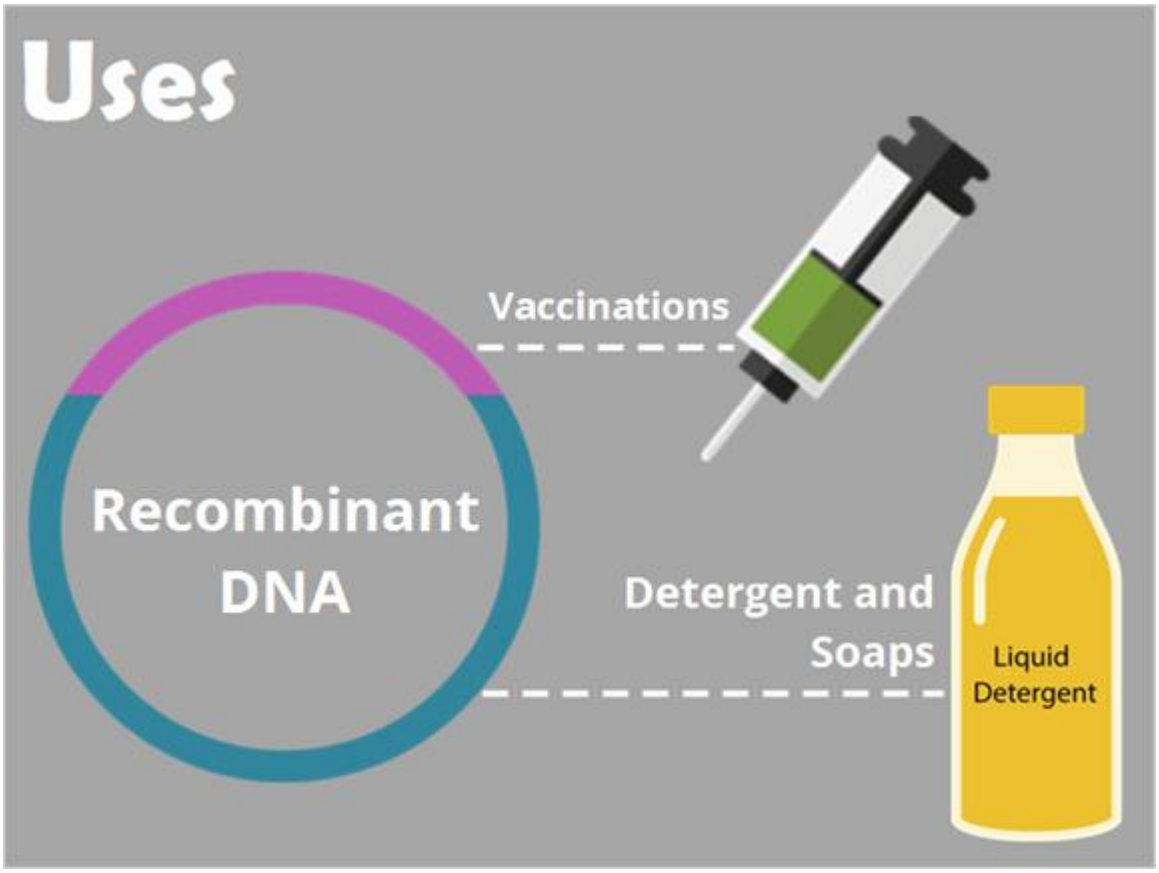
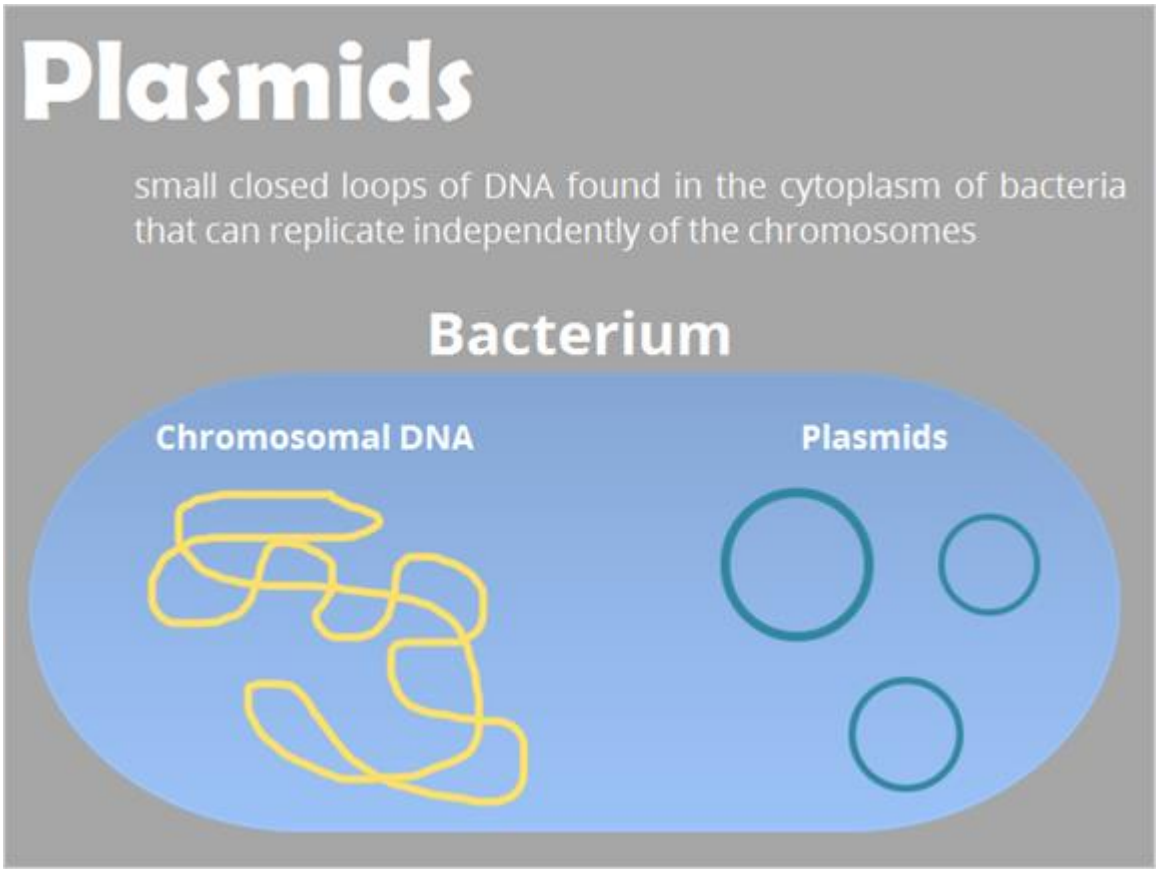


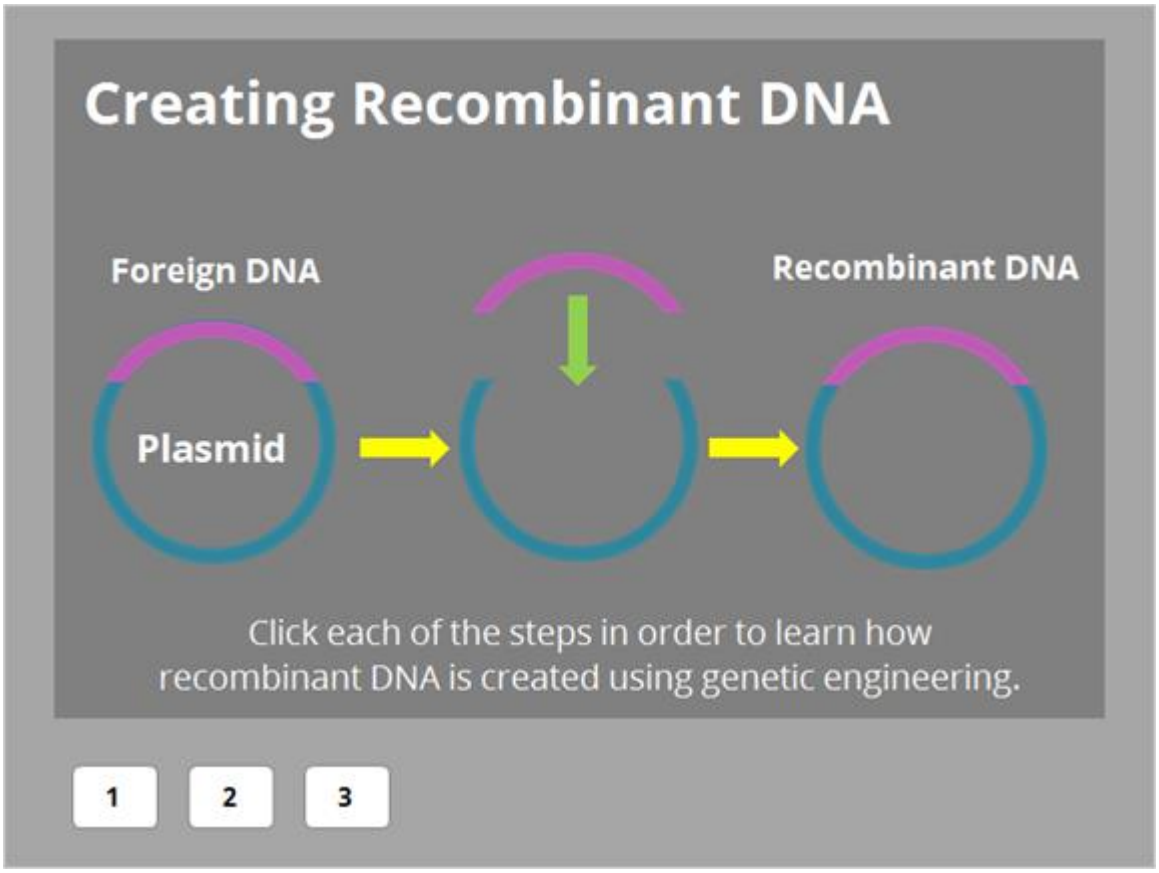
DNA is a large molecule, and often, only a single gene from a DNA molecule is required for study. In order to isolate a single gene from a DNA molecule, scientists use restriction enzymes to splice DNA at a restriction site. These gene fragments can be combined with DNA from other organisms to create recombinant DNA.



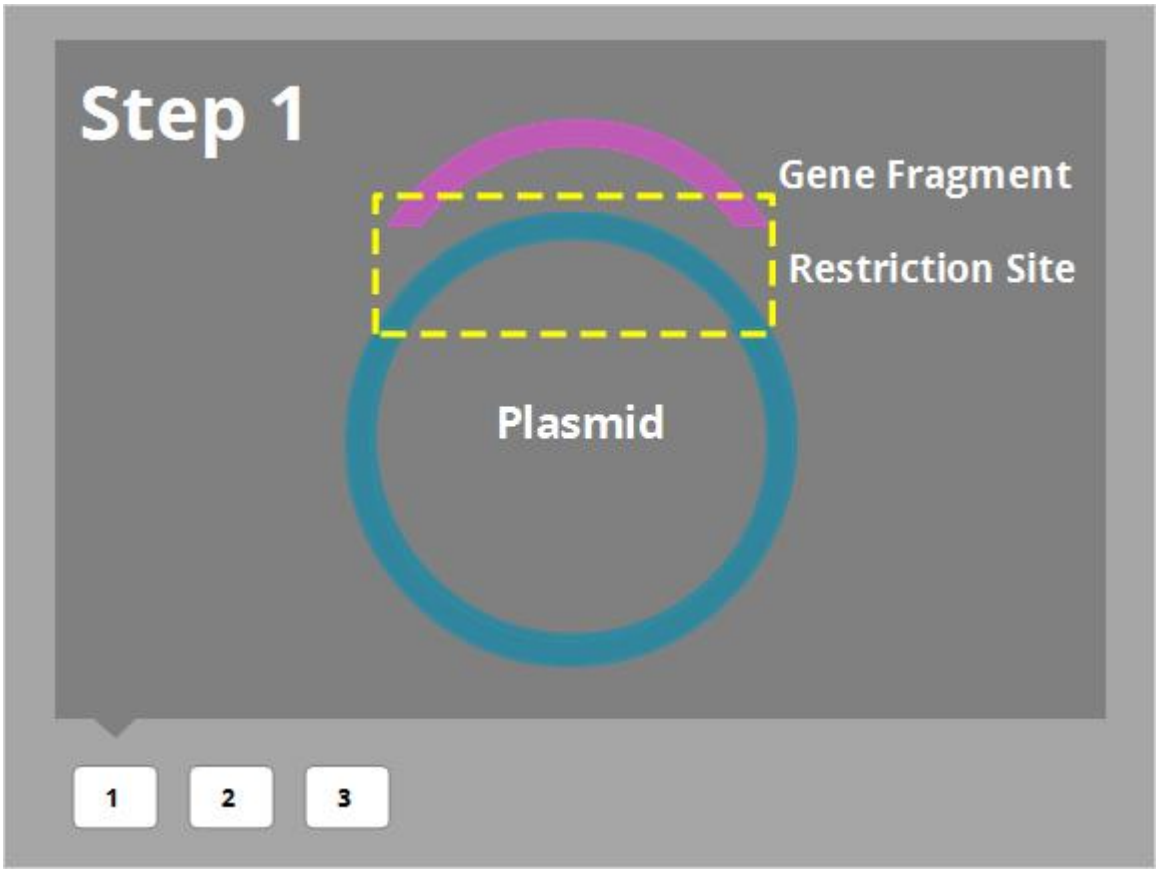
There are many uses and applications for recombinant DNA. Making recombinant DNA has led to a higher quality of consumer products, like detergent and soaps. Making recombinant DNA has also led to the production of new vaccinations to help combat disease and pathogens.



Bacteria are often used in genetic engineering. The reason that bacteria are used is due to their structure. Bacteria contain chromosomal DNA and plasmids. Plasmids are small closed loops of DNA that can replicate independently of the chromosomes. The DNA can be removed from the plasmid and foreign DNA can be inserted in its place, creating recombinant DNA.

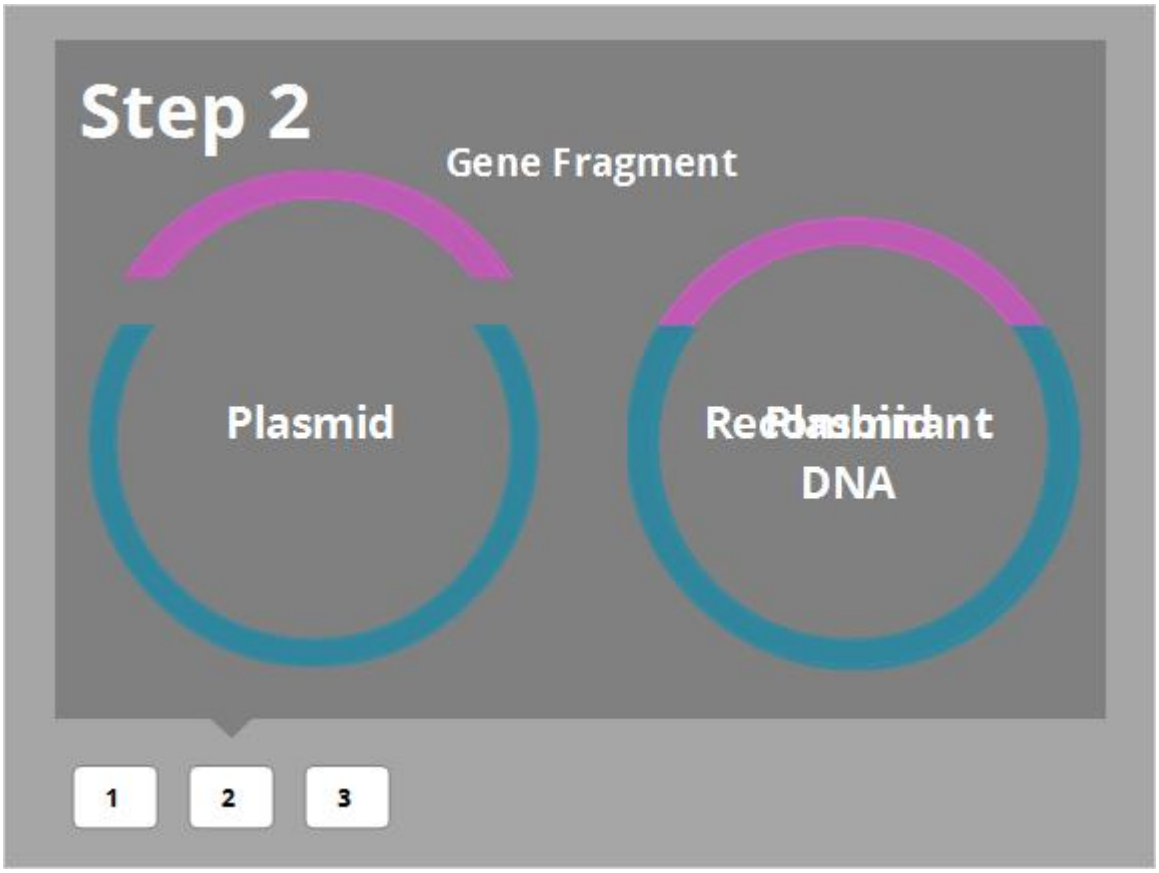


Click each of the steps in order to learn how recombinant DNA is created using genetic engineering.



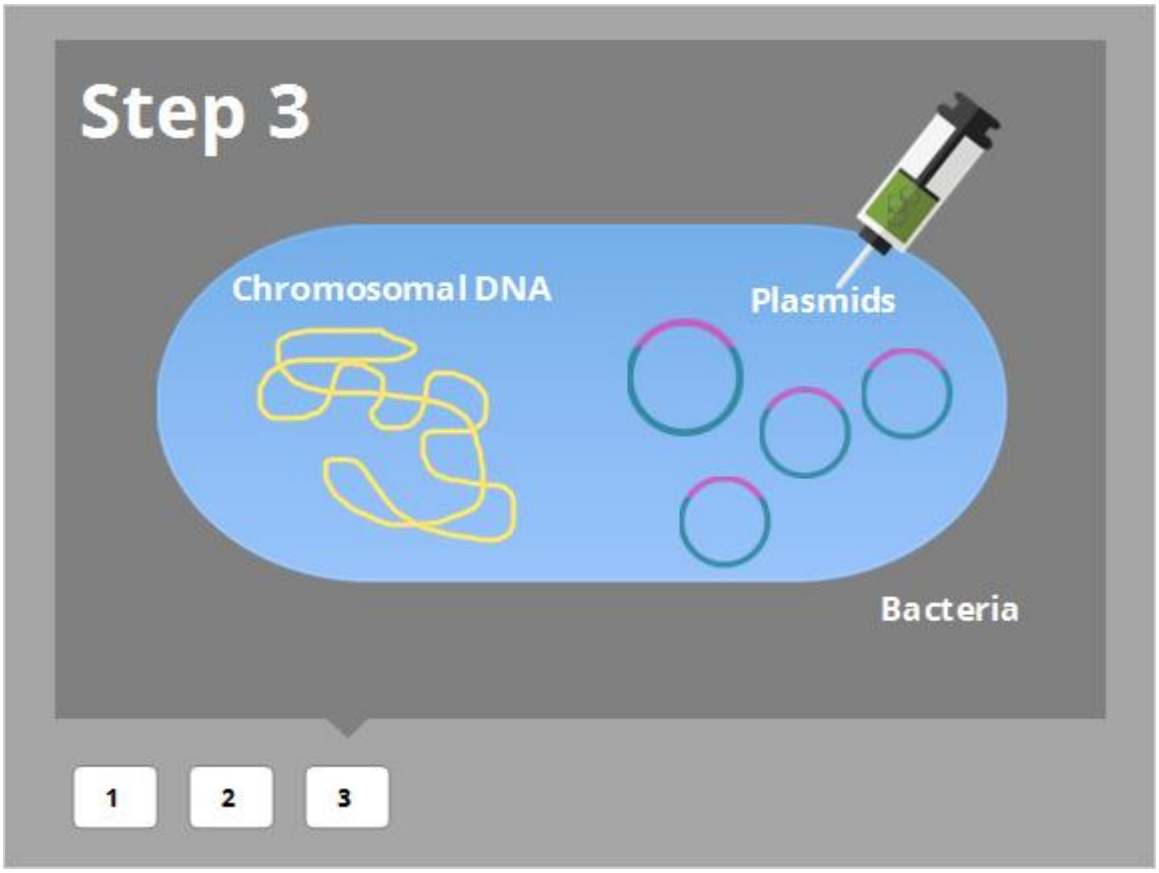
Step 1

The first step occurs when the DNA is cut or isolated from an organism. To do this, restriction enzymes cut a section of DNA from the chromosome at the restriction site.



Step 2

The second step occurs when the gene fragment is transferred and attached to another plasmid.



Step 3

The third step is when the new DNA is inserted into the host organism. When inserted, the new DNA replicates many times. Often, bacteria are used because they have a high reproduction rate.