

Important Points

- ✓ Biolistic is a method that used for the transformation of plant cells. It is a direct gene transferred method for constructing recombinant DNA. The gene gun was invented by John C. Sanford with Edward Wolf. A gene gun can be used to genetically infect cells or whole organisms with foreign DNA by aiming the barrel of the gun and firing. The microshot projectiles in the biolistic gene gun are made of microscopic (or nano) sized gold or platinum powders. These expensive powders are soaked in DNA or RNA (in raw or plasmid form) that are engineered for insertion into the genome of the cells or organisms under the gun.
- ✓ PCR is a technique for enzymatically replicating DNA without using a living organism such as *E. coli* or yeast. The correct steps shown in the above figure are: A - Denaturation at a temperature of about 94 ° to 98°C. During the denaturation, the double stranded DNA open to single stranded DNA, and all enzymatic reactions stop. B - Annealing (binding of DNA primer to the separated strands. Occurs at 50° to 65°C, which is lower than the optimal temperature of the DNA polymerases) C - Extension or elongation of the strands using the DNA primer with heat-stable DNA polymerases, most frequently Taq (*Thermus aquaticus*) at 72°C.
- ✓ Besides nuclear DNA, bacteria possesses extranuclear DNA (outside the nucleoid region) called as plasmid which can replicate independently. Due to this property plasmid holds great importance in genetic engineering. Plasmid can be taken out of bacteria and made to combine with desired DNA segment.
- ✓ In gel electrophoresis agarose extracted from sea weed used as gel agarose, made of 0.7% gel show good resolution of Large DNA and 2% gel will show good resolution of small fragments

