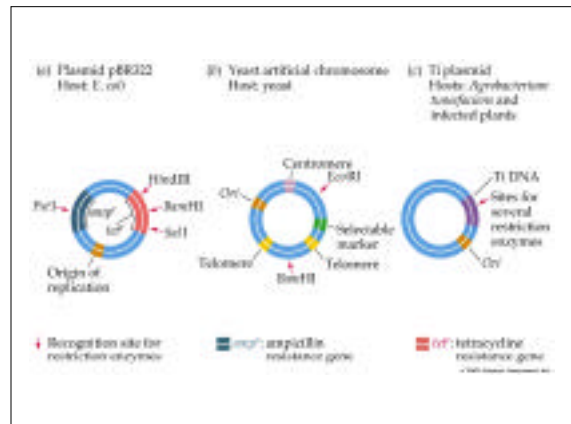
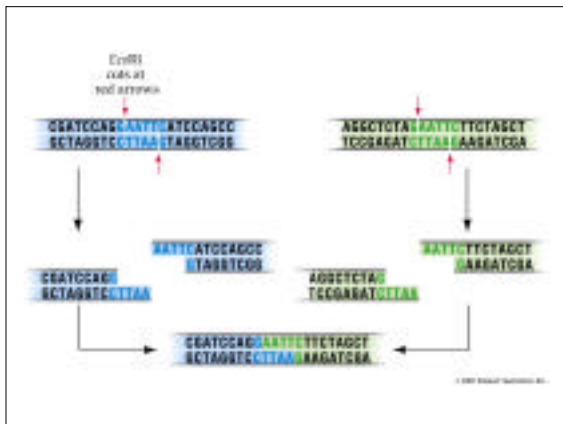
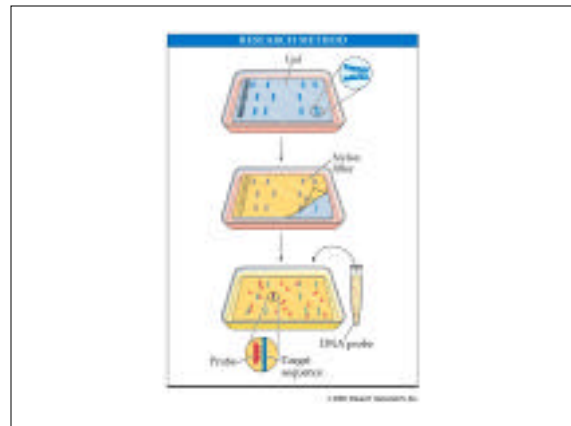
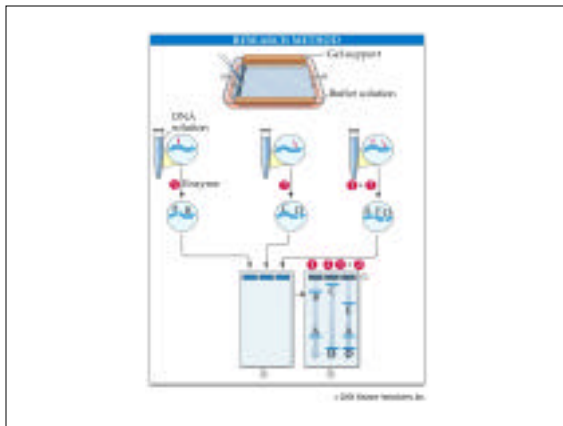
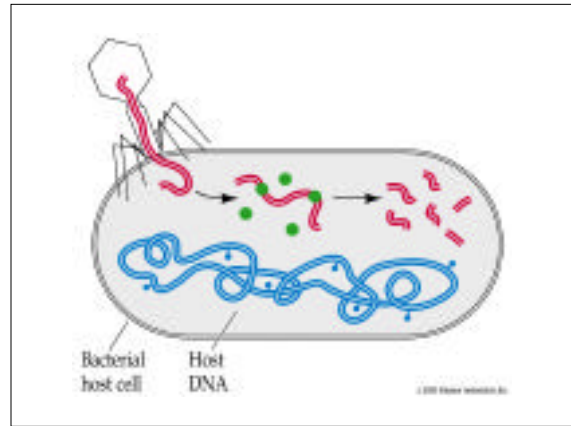
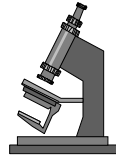
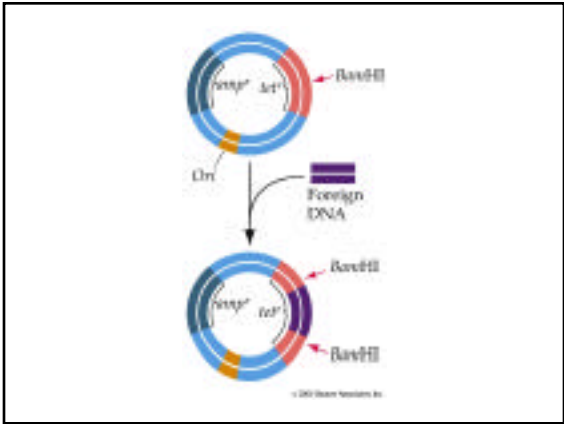


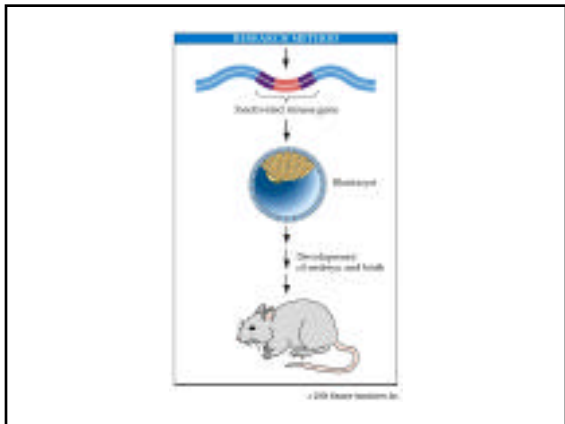
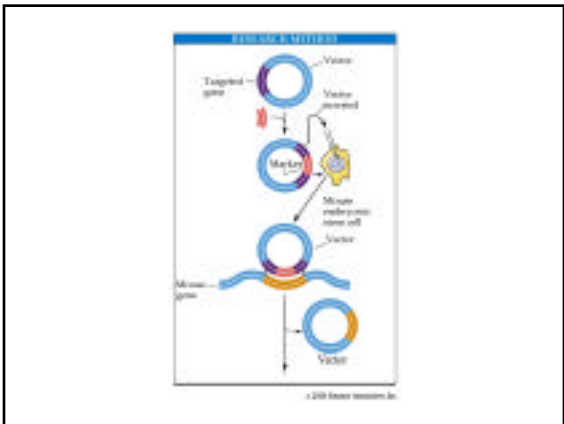
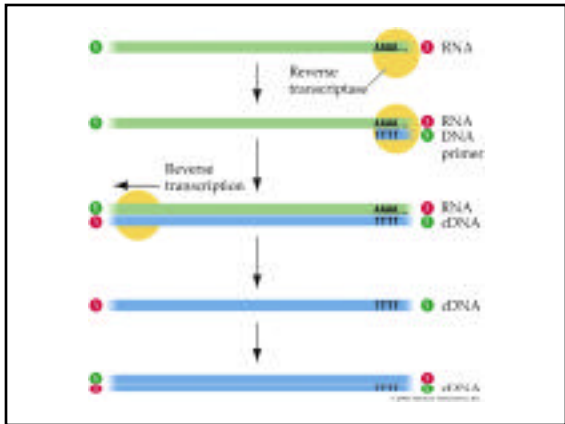
Biotechnology

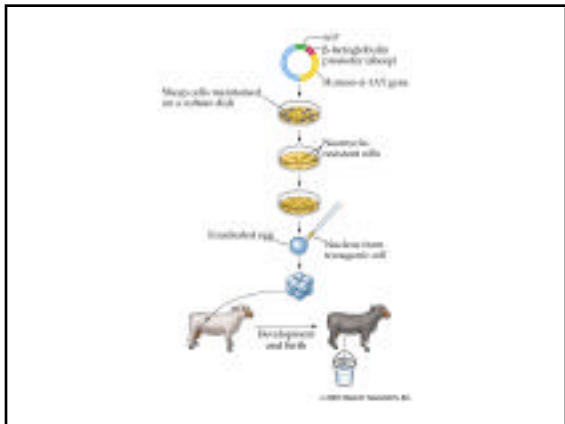
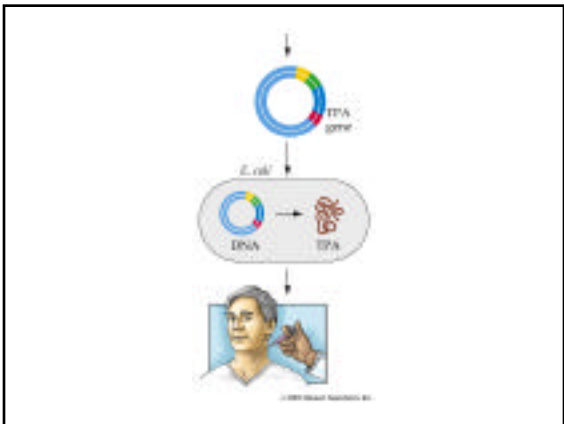
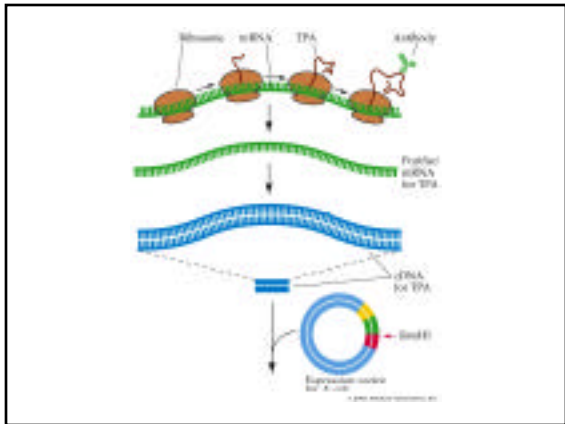
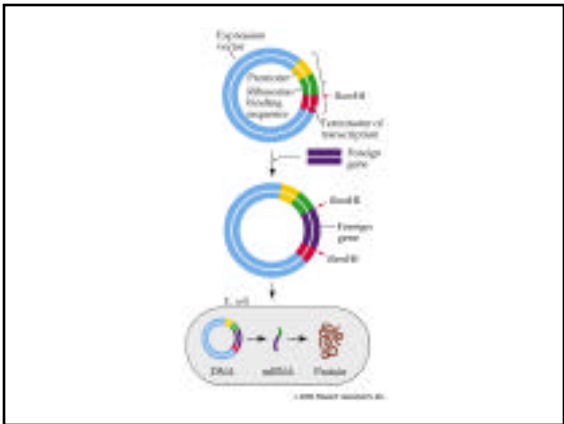
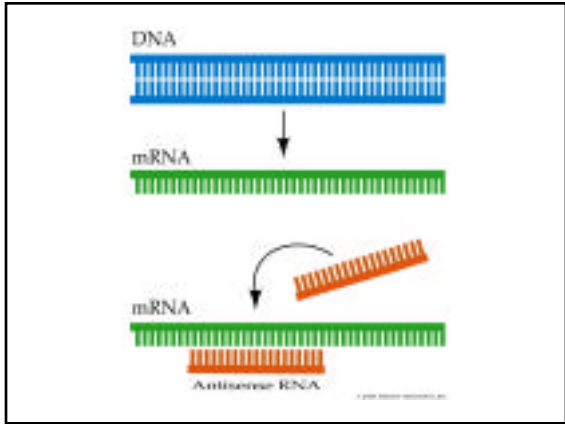
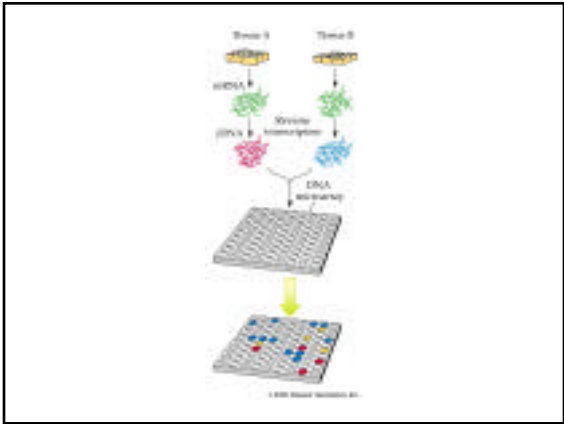


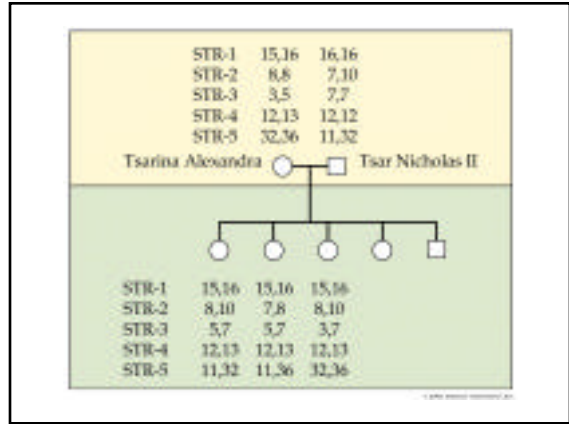
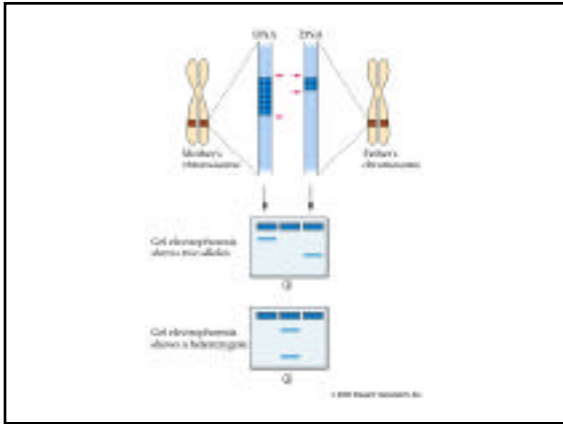


Detection of Recombinant DNA in E. coli

DNA TAKEN UP BY AMP ^R AND TET ^R E. COLI	PHENOTYPE FOR AMPICILLIN	PHENOTYPE FOR TETRACYCLINE
None	Sensitive	Sensitive
Foreign DNA only	Sensitive	Sensitive
pHER322 plasmid	Resistant	Resistant
pHER322 recombinant plasmid	Resistant	Sensitive







17.1 Some Medically Useful Products of Biotechnology

PRODUCT	USE
Brain-derived neurotrophic factor	Stimulates regrowth of brain tissue in patients with Lou Gehrig's disease
Colony-stimulating factor	Stimulates production of white blood cells in patients with cancer and AIDS
Erythropoietin	Prevents anemia in patients undergoing kidney dialysis
Factor VIII	Replaces clotting factor missing in patients with hemophilia A
Growth hormone	Replaces missing hormone in people of short stature
Insulin	Stimulates glucose uptake from blood in some people with diabetes
Plasmin-derived growth factor	Stimulates wound healing
Tissue plasminogen activator	Dissolves blood clots after heart attacks and strokes
Vaccine proteins: Hepatitis B, herpes, influenza, Lyme disease, meningitis, pertussis, etc.	Prevent and treat infectious diseases

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17.2 Agricultural Applications of Biotechnology under Development

PROBLEM	TECHNOLOGY/GENES
Improving the environmental adaptations of plants	Genes for drought tolerance, salt tolerance
Improving breeding	Male sterility for hybrid seeds
Improving nutritional traits	High lysine seeds
Improving crops after harvest	Delay of fruit ripening, high-solids tomatoes, sweeter vegetables
Using plants as biofactories	Plastics, oils, and drugs produced in plants
Controlling crop pests	Herbicide tolerance, resistance to viruses, bacteria, fungi, insects

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