

Biotechnology

Pages 232 - 246

1. Introduction

A. Recombinant DNA Technology (Genetic Engineering)

- i. Transgenic Organism
- ii. Purpose
 - a. Drug Manufacturing
 - b. Food Amelioration
 - c. Organ/tissue Replacement
 - d. Environmental Cleanup
 - e. Genetic Libraries
 - f. Vaccine production

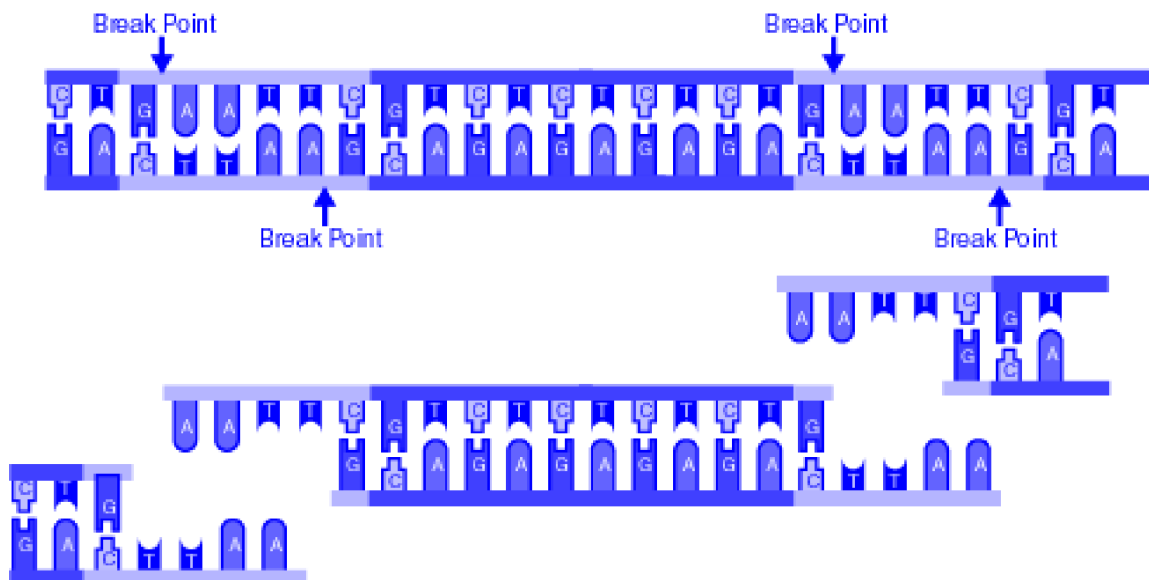
B. Vectors

- * Viruses
- * Plasmids

2. Essential Methodology (See *Biotechnology Handout: “Genetic Engineering Example”*)

A. Restriction Enzymes (Page 223 - 224)

i. Example: EcoR1



i. Restriction Fragments

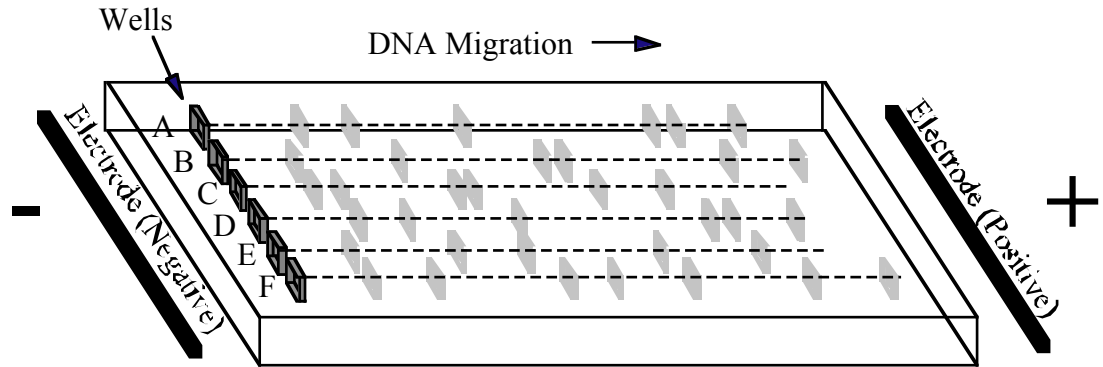
ii. Sticky Ends

iii. Insertion into Plasmid

iv. Anneal

a. DNA Ligase

3. Gel Electrophoresis (Pages 234 - 235)



A. DNA Fingerprinting

4. Gene Collection from Humans (*See Biotechnology Handout: "Preparation of Human DNA for Insertion into a Plasmid"*)

Pages 238 - 241

A. Methods of Collection

- i. DNA Digestion
- ii. Collect messenger RNA
- iii. Apply Reverse Transcriptase

5. Genetic Engineering of Vaccines (See Page 236, Protein Production)

5. Applications

- Transgenic Organisms (p 265 - example)

A. Genetically Engineered Crops

i. Examples

i. Herbicide Resistance

ii. Disease Resistance

iii. Insect Resistance

B. Transgenic Bacteria