

# 3.5 Genetic Modification and Biotechnology

## Experimental Techniques

Describe the purpose and process of the polymerase chain reaction (PCR)

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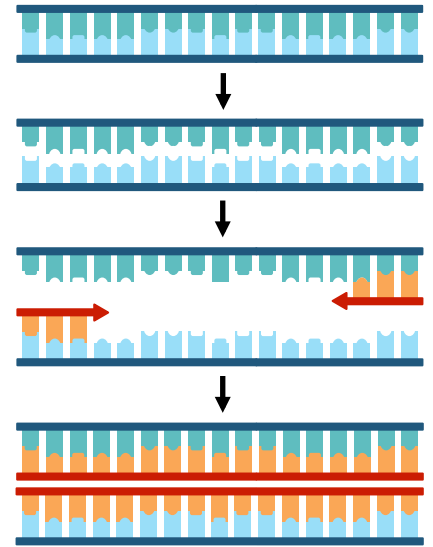
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Describe the purpose and process of gel electrophoresis (with regards to both DNA and proteins)

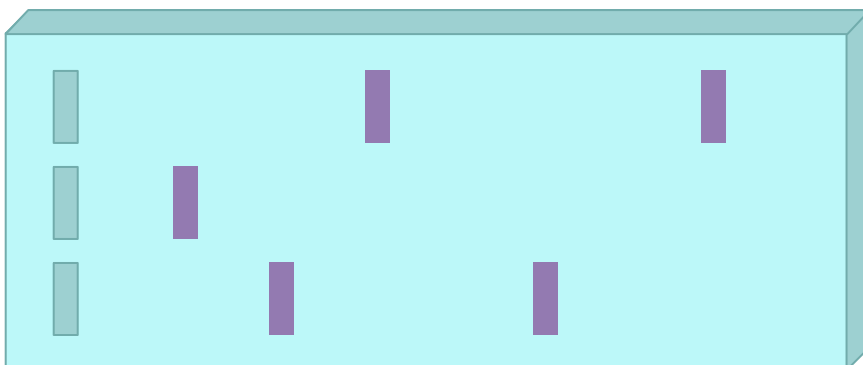
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On the following diagram, identify the terminals and order the fragments from largest to smallest



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Identify two types of vectors for gene transfer

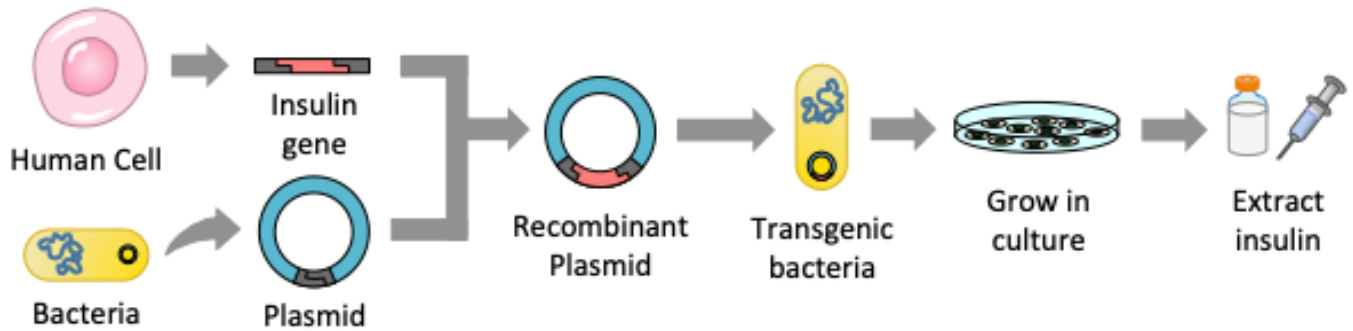
1. ....
2. ....

Distinguish between 'blunt' and 'sticky end' restriction endonucleases

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With the aid of the diagram, outline the process of gene transfer



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### Experimental Applications

Explain the role short tandem repeats (STRs) play in DNA profiling

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Outline two potential applications for DNA profiling

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# Cloning

Define clone

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Identify four methods of natural cloning in animals

1. ....

2. ....

3. ....

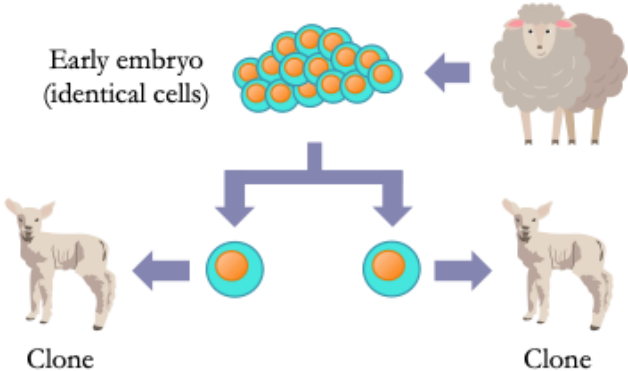
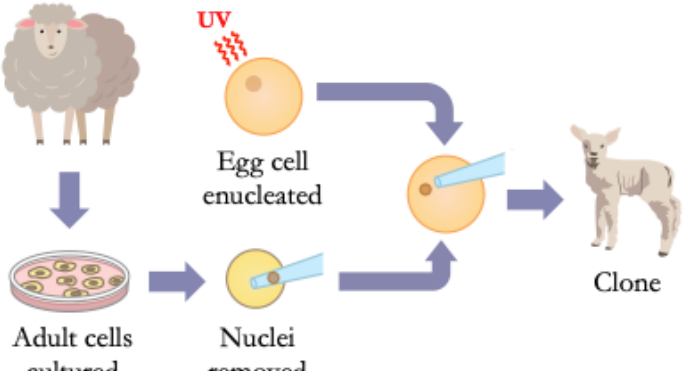
4. ....

Outline how stem cuttings can be used to clone plants

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With the aid of the following diagrams, explain how organisms can be cloned artificially

Embryo Division	Somatic Cell Nuclear Transfer (SCNT)
 <p>Early embryo (identical cells)</p> <p>Clone</p> <p>Clone</p>	 <p>UV</p> <p>Egg cell enucleated</p> <p>Clone</p> <p>Adult cells cultured</p> <p>Nuclei removed</p>
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