BIOLOGY YEAR 12 - MODULE 6 - LESSON 7

# Gene Pools - Mutation, Gene Flow and Genetic Drift

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

## 1. Key Ideas

A gene pool is the population-level collection of alleles. Mutation adds new alleles, gene flow moves alleles between populations, and genetic drift changes allele frequencies by chance, especially in small populations. These processes all change populations, but they do not do it in the same way.

- Mutation adds new alleles.
- These processes all change the gene pool in different ways.

## 2. Success Criteria

By the end, you should be able to:

- Mutation adds new alleles.
- Gene flow moves alleles between populations.
- Genetic drift changes allele frequencies by chance.

## 3. Key Terms

**Gene pool**
The total collection of alleles present in a population.

**Allele frequency**
How common an allele is in a population relative to other alleles of the same gene.

**Mutation**
A source of new alleles entering the gene pool.

**Gene flow**
Movement of alleles between populations through migration and breeding.

**Genetic drift**
Random change in allele frequency, especially influential in small populations.

**Founder effect / bottleneck**
Examples of strong drift where a small starting group or sharp population reduction changes allele frequencies by chance.

## 4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

| Prompt | Your answer |
| --- | --- |
| Main concept | |
| Important example | |
| Common mistake to avoid | |
| How this links to the next lesson | |

## 5. Short Answer Questions

**1. Explain this lesson goal in your own words: "Mutation adds new alleles.". Use one specific example from the lesson.**

BAND 3 2 MARKS

**2. Apply this idea to a new example: "Gene flow moves alleles between populations.". Show your reasoning clearly.**

BAND 4 3 MARKS

**3. Analyse why this idea matters for understanding Gene Pools - Mutation, Gene Flow and Genetic Drift: "Genetic drift changes allele frequencies by chance.".**

BAND 5 4 MARKS

## 6. Extend: Apply the Idea

BAND 5/6 5 MARKS

**A student gives a memorised answer about Gene Pools - Mutation, Gene Flow and Genetic Drift but does not use evidence or reasoning.**

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

## 7. Multiple Choice

**1.** What is the best first step when answering a question about Gene Pools - Mutation, Gene Flow and Genetic Drift?

- [ ] A. Identify the key concept being tested
- [ ] B. Write every fact from memory
- [ ] C. Ignore the command word
- [ ] D. Skip examples and evidence

**2.** Which answer would show stronger understanding of Gene Pools - Mutation, Gene Flow and Genetic Drift?

- [ ] A. An answer with accurate terms and reasoning
- [ ] B. A copied definition only
- [ ] C. A single-word response
- [ ] D. An answer with no example

**3.** What should you do if a question asks you to explain?

- [ ] A. Link the idea to a reason or cause
- [ ] B. List unrelated facts
- [ ] C. Only draw a diagram
- [ ] D. Write the shortest possible answer

## 8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

**SUCCESS CRITERION 1**

**Prove that you can: Mutation adds new alleles.**

BAND 3 2 MARKS

**SUCCESS CRITERION 2**

**Prove that you can: Gene flow moves alleles between populations.**

BAND 4 3 MARKS

**SUCCESS CRITERION 3**

**Prove that you can: Genetic drift changes allele frequencies by chance.**

BAND 5 4 MARKS

**One thing I still need help with:**