BIOLOGY YEAR 12 - MODULE 6 - LESSON 5

Somatic vs Germ-Line Mutation; Coding vs Non-Coding DNA

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 mutation matters differently depending on which cells it occurs in and where in the genome it lands. A skin-cell mutation may affect one person only, while a mutation in a gamete lineage can enter a population. A mutation outside a coding sequence may still matter if it changes when, where or how strongly a gene is expressed.

- Somatic mutations usually affect only the individual.
- Inheritance depends on which cell lineage carries the mutation.

2. Success Criteria

By the end, you should be able to:

- Somatic mutations usually affect only the individual.
- Germ-line mutations can be inherited by offspring.
- Coding and non-coding DNA mutations can both be significant.

3. Key Terms

Somatic mutation
A mutation occurring in a body cell. It can affect the individual but is not normally inherited by offspring.

Germ-line mutation
A mutation occurring in the gamete-producing cell line or in a gamete, so it can be passed to offspring.

Coding DNA
DNA sequence that contributes to the amino acid sequence of a protein.

Non-coding DNA
DNA sequence not translated into protein, but often important in regulation, timing and genome function.

Regulation
Control of when, where and how strongly a gene is expressed.

Population relevance
Whether a mutation can enter the gene pool and affect future generations.

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: "Somatic mutations usually affect only the individual.". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "Germ-line mutations can be inherited by offspring.". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Somatic vs Germ-Line Mutation; Coding vs Non-Coding DNA: "Coding and non-coding DNA mutations can both be significant.".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Somatic vs Germ-Line Mutation; Coding vs Non-Coding DNA 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 Somatic vs Germ-Line Mutation; Coding vs Non-Coding DNA?

☐ 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 Somatic vs Germ-Line Mutation; Coding vs Non-Coding DNA?

☐ 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: Somatic mutations usually affect only the individual.

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Germ-line mutations can be inherited by offspring.

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Coding and non-coding DNA mutations can both be significant.

BAND 5 4 MARKS

One thing I still need help with: