

# Chromosomal Mutation - Large-Scale Genetic Change

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

Point mutation changes bases locally. Chromosomal mutation changes the structure of a chromosome segment or, in some examples, chromosome number. Because many genes can sit inside one altered region, the biological consequences are often broader and less predictable than a single-codon change.

- Chromosomal mutation categories are deletion, duplication, inversion and translocation.
- Large-scale mutations often have broader consequences than point mutations.

## 2. Success Criteria

By the end, you should be able to:

- Chromosomal mutation categories are deletion, duplication, inversion and translocation.
- Chromosomal change can affect many genes at once.
- Chromosome number change exists as a related large-scale category.

## 3. Key Terms

### Chromosomal mutation

A mutation involving large-scale changes to chromosome structure, and sometimes chromosome number, rather than a single base sequence.

### Deletion

A chromosome segment is lost, removing multiple genes from that region.

### Duplication

A chromosome segment is copied twice, increasing gene dosage in that region.

### Inversion

A chromosome segment breaks off and reattaches in reverse orientation.

### Translocation

A chromosome segment moves to a different position, often onto another chromosome.

### Gene dosage

The number of copies of a gene present, which can affect how much product is made.

## 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: "Chromosomal mutation categories are deletion, duplication, inversion and translocation.". Use one specific example from the lesson.

**BAND 3** **2 MARKS**

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2. Apply this idea to a new example: "Chromosomal change can affect many genes at once.". Show your reasoning clearly.

**BAND 4** **3 MARKS**

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3. Analyse why this idea matters for understanding Chromosomal Mutation - Large-Scale Genetic Change: "Chromosome number change exists as a related large-scale category.".

**BAND 5** **4 MARKS**

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## 6. Extend: Apply the Idea

BAND 5/6

5 MARKS

**A student gives a memorised answer about Chromosomal Mutation - Large-Scale Genetic Change 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.

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## 7. Multiple Choice

1. What is the best first step when answering a question about Chromosomal Mutation - Large-Scale Genetic Change?

- 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 Chromosomal Mutation - Large-Scale Genetic Change?

- 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: Chromosomal mutation categories are deletion, duplication, inversion and translocation.**

**BAND 3** **2 MARKS**

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### SUCCESS CRITERION 2

**Prove that you can: Chromosomal change can affect many genes at once.**

**BAND 4** **3 MARKS**

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### SUCCESS CRITERION 3

**Prove that you can: Chromosome number change exists as a related large-scale category.**

**BAND 5** **4 MARKS**

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

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