

Recombinant DNA Technology and Transgenic Organisms

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

Recombinant DNA is not a buzzword. It is a process chain: identify DNA, cut it, join it into a vector, introduce it into a host cell, and then use the resulting cells or organisms. This lesson explains that toolchain and the applications of transgenic organisms in agriculture and medicine.

- Recombinant DNA technology uses restriction enzymes, ligase, vectors and host cells.
- Recombinant DNA is a stepwise toolchain rather than one single action.

2. Success Criteria

By the end, you should be able to:

- Recombinant DNA technology uses restriction enzymes, ligase, vectors and host cells.
- Transgenic organisms are produced by inserted DNA, not just selective breeding.
- Applications include agricultural and medical uses.

3. Key Terms

Recombinant DNA

DNA formed by combining genetic material from different sources.

Restriction enzyme

An enzyme that cuts DNA at specific base sequences.

DNA ligase

An enzyme that joins DNA fragments together.

Vector

A carrier, such as a plasmid, used to move DNA into a host cell.

Host cell

The cell that receives recombinant DNA and can replicate or express it.

Transgenic organism

An organism containing inserted DNA from another source.

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: "Recombinant DNA technology uses restriction enzymes, ligase, vectors and host cells.". Use one specific example from the lesson.

BAND 3

2 MARKS

2. Apply this idea to a new example: "Transgenic organisms are produced by inserted DNA, not just selective breeding.". Show your reasoning clearly.

BAND 4

3 MARKS

3. Analyse why this idea matters for understanding Recombinant DNA Technology and Transgenic Organisms: "Applications include agricultural and medical uses.".

BAND 5

4 MARKS

6. Extend: Apply the Idea

BAND 5/6

5 MARKS

A student gives a memorised answer about Recombinant DNA Technology and Transgenic Organisms 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 Recombinant DNA Technology and Transgenic Organisms?

- 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 Recombinant DNA Technology and Transgenic Organisms?

- 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: Recombinant DNA technology uses restriction enzymes, ligase, vectors and host cells.

BAND 3 **2 MARKS**

SUCCESS CRITERION 2

Prove that you can: Transgenic organisms are produced by inserted DNA, not just selective breeding.

BAND 4 **3 MARKS**

SUCCESS CRITERION 3

Prove that you can: Applications include agricultural and medical uses.

BAND 5 **4 MARKS**

One thing I still need help with:
