BIOLOGY YEAR 12 - MODULE 6 - LESSON 10

Future Directions and Potential Benefits for Society

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

Biotechnology is moving toward greater precision, faster diagnosis and more targeted intervention. Future directions such as gene editing, synthetic biology, precision breeding, disease screening and targeted therapies may benefit society, but realistic evaluation depends on separating what is already possible from what is still emerging.

- Future biotechnology directions include gene editing, synthetic biology, precision breeding and advanced screening.
- Emerging technology should be evaluated realistically, not imaginatively.

2. Success Criteria

By the end, you should be able to:

- Future biotechnology directions include gene editing, synthetic biology, precision breeding and advanced screening.
- Potential benefits exist across agriculture, medicine and industry.
- Current capability and future possibility are not the same thing.

3. Key Terms

Gene editing
Targeted alteration of DNA sequence at a chosen location.

Synthetic biology
Design or redesign of biological systems for specific purposes.

Precision breeding
Use of genetic knowledge or targeted tools to guide breeding outcomes more efficiently.

Disease screening
Use of biotechnology to identify genetic risks or biological markers earlier and more accurately.

Targeted therapy
Treatment designed to act on a particular molecular or genetic feature rather than affecting all cells broadly.

Feasibility
Whether a technology is practical, effective, safe and scalable outside theory or small trials.

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: "Future biotechnology directions include gene editing, synthetic biology, precision breeding and advanced screening.". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "Potential benefits exist across agriculture, medicine and industry.". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Future Directions and Potential Benefits for Society: "Current capability and future possibility are not the same thing.".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Future Directions and Potential Benefits for Society 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 Future Directions and Potential Benefits for Society?

- [ ] 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 Future Directions and Potential Benefits for Society?

- [ ] 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: Future biotechnology directions include gene editing, synthetic biology, precision breeding and advanced screening.

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Potential benefits exist across agriculture, medicine and industry.

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Current capability and future possibility are not the same thing.

BAND 5 4 MARKS

One thing I still need help with: