BIOLOGY YEAR 12 - MODULE 5 - LESSON 19

Predicting Population Genetic Patterns - Strengths, Limits and Synthesis

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

Population genetics allows strong inference about broad trends, but not unlimited certainty. This final lesson synthesises what Module 5 can predict reliably, what remains uncertain, and how these patterns can change further when mutation and genetic technologies are considered in Module 6.

- What population genetics can predict reliably.
- Why broad trends are often stronger than exact individual predictions.

2. Success Criteria

By the end, you should be able to:

- What population genetics can predict reliably.
- What cannot be predicted with certainty from current evidence alone.
- Why broad trends are often stronger than exact individual predictions.

3. Key Terms

Risk pattern
A trend showing relative likelihood of an inherited condition or variant in a population or group.

Allele distribution
How allele frequencies are spread across a population or between populations.

Relatedness trend
A pattern of broad genetic similarity suggesting population relationships.

Prediction
A scientifically supported expectation based on evidence and assumptions.

Uncertainty
The limit on how exact or complete a conclusion can be, even when evidence is strong.

Synthesis
Bringing ideas from across the module together into one coherent understanding.

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: "What population genetics can predict reliably.". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "What cannot be predicted with certainty from current evidence alone.". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Predicting Population Genetic Patterns - Strengths, Limits and Synthesis: "Why broad trends are often stronger than exact individual predictions.".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Predicting Population Genetic Patterns - Strengths, Limits and Synthesis 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 Predicting Population Genetic Patterns - Strengths, Limits and Synthesis?

- [ ] 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 Predicting Population Genetic Patterns - Strengths, Limits and Synthesis?

- [ ] 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: What population genetics can predict reliably.

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: What cannot be predicted with certainty from current evidence alone.

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Why broad trends are often stronger than exact individual predictions.

BAND 5 4 MARKS

One thing I still need help with: