

## 18. Variation and selection

### Starter Quiz · 课前小测

IGCSE Biology

Name: \_\_\_\_\_ Score: \_\_\_\_\_

1. Which is an example of genetic variation?

- ☐ blood group
- ☐ a scar
- ☐ a learned language
- ☐ a suntan

2. An adaptive feature is one that helps an organism:

- ☐ survive and reproduce in its environment
- ☐ grow taller than others
- ☐ change its DNA at will
- ☐ live forever

3. Antibiotic resistance evolves because:

- ☐ resistant bacteria survive and multiply while others die
- ☐ bacteria decide to resist
- ☐ antibiotics make bacteria stronger
- ☐ bacteria stop reproducing

4. Selective breeding means choosing:

- ☐ parents with desired features to breed together
- ☐ random parents
- ☐ the weakest individuals
- ☐ never to breed

5. Which shows continuous variation?

- ☐ height
- ☐ blood group
- ☐ tongue rolling
- ☐ eye colour categories

6. Which are uses of selective breeding? (Select all that apply.)

- ☐ cows that produce more milk
- ☐ crops with higher yield

☐ disease-resistant plants

☐ wild animals untouched by humans

*Tick every correct option.*

7. Which create genetic variation? (Select all that apply.)

- ☐ meiosis
- ☐ fertilisation
- ☐ mutations
- ☐ eating well

*Tick every correct option.*

8. Variation arises randomly; organisms do not choose to adapt.

☐ True    ☐ False

9. Variation is the raw material that natural selection acts on.

☐ True    ☐ False

10. Adaptations can be structural, behavioural or functional.

☐ True    ☐ False

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1. **blood group**

Blood group is determined by genes; the others are environmental.

2. **survive and reproduce in its environment**

Adaptations improve survival and reproduction.

3. **resistant bacteria survive and multiply while others die**

Selection favours the already-resistant bacteria.

4. **parents with desired features to breed together**

Humans pick the parents with the wanted trait.

5. **height**

Height varies over a continuous range.

6. **cows that produce more milk; crops with higher yield; disease-resistant plants**

The first three are selective breeding; the last is not.

7. **meiosis; fertilisation; mutations**

Meiosis, fertilisation and mutations create variation; diet is environmental.

8. **True**

Mutations are random; selection favours helpful ones.

9. **True**

Without variation there could be no natural selection.

10. **True**

All three types help survival.