

16. Inheritance

Starter Quiz · 课前小测

A-Level Biology

Name: _____ Score: _____

1. Why must gametes be haploid?
 - ☐ so the chromosome number does not double at every generation
 - ☐ so they can move faster
 - ☐ so they have more chromosomes
 - ☐ so they can photosynthesise
2. An allele is:
 - ☐ one version of a gene
 - ☐ the position of a gene on a chromosome
 - ☐ a whole chromosome
 - ☐ a type of protein
3. A Punnett square is used to predict the offspring genotypes and ratios of a genetic cross.
 - ☐ True ☐ False
4. How does a faulty allele change the phenotype?
 - ☐ it makes a faulty protein, which changes the feature the protein controls
 - ☐ it adds a new chromosome
 - ☐ it has no effect on the protein
 - ☐ it changes the number of genes
5. A regulatory gene:
 - ☐ controls whether other genes are switched on
 - ☐ always codes for an enzyme
 - ☐ is never expressed
 - ☐ makes the cell wall
6. Meiosis halves the chromosome number, producing _____ gametes (one set of chromosomes each).

7. A recessive allele:
 - ☐ only shows its effect when two copies are present
 - ☐ shows its effect with just one copy

- ☐ always masks the dominant allele
- ☐ is never inherited

8. A faulty allele changes the phenotype because it codes for a faulty protein.
 - ☐ True ☐ False
9. An enzyme that is made only when it is needed (like the lac enzymes) is described as _____.

10. The observable features of an organism (what you can actually see) are its _____.

A-Level Biology

1. **so the chromosome number does not double at every generation**

If gametes were diploid, fertilisation would double the chromosome number each generation; meiosis halves it.

2. **one version of a gene**

An allele is a version of a gene; its position on the chromosome is the locus.

3. **True**

It combines every possible pairing of the parents' gametes.

4. **it makes a faulty protein, which changes the feature the protein controls**

A gene codes for a protein; a faulty allele makes a faulty protein, altering the phenotype.

5. **controls whether other genes are switched on**

Structural genes code for proteins like enzymes; regulatory genes control whether other genes are switched on.

6. **haploid**

Two haploid gametes fuse at fertilisation to restore the diploid number.

7. **only shows its effect when two copies are present**

A recessive allele is only expressed when homozygous; a dominant allele shows with a single copy.

8. **True**

The DNA sequence sets the protein's shape; change the sequence and you change (or break) the protein.

9. **inducible**

Inducible enzymes are produced only when required, which avoids wasting resources.

10. **phenotype**

Phenotype = what shows; genotype = the alleles present (which, with the environment, decide the phenotype).