Name: Score:

20 Multiple choice questions

Term 1 of 20

What is the difference between mitosis and meiosis?

- Sister chromatids separate to form two identical daughter cells.
- Meiosis results in four haploid daughter cells, each with half the number of chromosomes.
- Mitosis produces two identical diploid cells, while meiosis produces four genetically diverse haploid cells.
- Mitosis produces four genetically diverse diploid cells, while meiosis produces two identical haploid cells.

Term 2 of 20

What is a chiasma?

- A chiasma is the point where sister chromatids separate during mitosis.
- A chiasma is the point where homologous chromosomes exchange genetic material during meiosis.
- A chiasma is the region where chromosomes duplicate during meiosis.
- A chiasma is the site where chromosomes condense during cell division.

Term 3 of 20

What are the expected phenotypic ratios in the F2 generation from a monohybrid cross?

- The expected phenotypic ratio is 3:1 for dominant to recessive traits.
- The expected phenotypic ratio is 2:1 for dominant to recessive traits.
- The expected phenotypic ratio is 1:3 for dominant to recessive traits.
- The expected phenotypic ratio is 4:1 for dominant to recessive traits.

Term 4 of 20

Can two organisms have the same phenotype but different genotypes?

- Yes, two organisms can have the same phenotype (e.g., purple flowers) but different genotypes (e.g., one homozygous dominant and the other heterozygous).
- It does not account for how traits can reappear in later generations, as traits do not blend but are inherited as discrete units.
- The centromere is the region where sister chromatids are joined and where spindle fibers attach during cell division.
- Dominant alleles are not necessarily more common; for example, polydactyly (extra fingers or toes) is a recessive trait that can be rare.

Term 5 of 20

What is the significance of dominant alleles in a population?

- Dominant alleles are not necessarily more common; for example, polydactyly (extra fingers or toes) is a recessive trait that can be rare.
- Dominant alleles are always expressed; for example, red hair is a dominant trait.
- Dominant alleles are necessarily more common; for example, blonde hair is a dominant trait.
- Dominant alleles are always more common; for example, blue eyes are a dominant trait.

Term 6 of 20

What does the term 'genotype' refer to?

- Genotype refers to an organism's observable behavior.
- Genotype refers to an organism's external appearance.
- Genotype refers to an organism's physical traits.
- Genotype refers to an organism's genetic makeup.

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Term 7 of 20

What does the term 'phenotype' refer to?

- Phenotype refers to an organism's genetic code.
- Phenotype refers to an organism's observable traits or physical appearance.
- Phenotype refers to an organism's DNA sequence.
- Phenotype refers to an organism's cellular structure.

Term 8 of 20

What are the genotypes for the F1 generation when crossing PP (purple) with pp (white)?

- A Punnett square is used to predict the genotypes of offspring from a genetic cross.
- Offspring will be a mix of PP (purple) and pp (white).
- All offspring will be Pp (purple).
- All offspring will be P (purple).

Term 9 of 20

What is the purpose of a Punnett square?

- A Punnett square is used to analyze the mutations in offspring.
- A Punnett square is used to determine the physical traits of offspring.
- A Punnett square is used to predict the environmental influences on offspring.
- A Punnett square is used to predict the genotypes of offspring from a genetic cross.

Term 10 of 20

What is the relationship between alleles A and B in the ABO blood group?

- The ABO blood group is determined by three alleles: A, B, and i.
- Both A and B are dominant to i and are codominant to each other.
- Both A and B are recessive to i and dominant to each other.
- Both A and B are recessive to i and A is dominant to B.

Term 11 of 20

What is the outcome of crossing BbCc with BbCc in terms of color in mice?

- The expected phenotypic ratio is 3 black with color: 9 black without color: 1 brown with color: 3 brown without color.
- The expected phenotypic ratio is 12 black with color: 4 black without color: 2 brown with color: 2 brown without color.
- The expected phenotypic ratio is 9 black with color: 3 black without color: 3 brown with color: 1 brown without color.
- The expected phenotypic ratio is 6 black with color: 2 black without color: 6 brown with color: 2 brown without color.

Term 12 of 20

What is the blending hypothesis in genetics?

- The blending hypothesis suggests that genetic material from two parents blends together, like mixing paint.
- The blending hypothesis suggests that genetic material is passed down unchanged.
- The blending hypothesis suggests that genetic material duplicates exactly.
- The blending hypothesis proposes that genetic material is randomly discarded.

Term 13 of 20

What is the role of sister chromatids during mitosis?

- Sister chromatids separate to form two identical daughter cells.
- Sister chromatids pair up to form new cells.
- Sister chromatids merge to create a single daughter cell.
- Sister chromatids remain joined throughout cell division.

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Term 14 of 20

How many possible genotypes can be formed from the ABO blood group alleles?

- ○ There are 3 possible genotypes and 5 possible blood types.
- ○ There are 6 possible genotypes and 4 possible blood types.
- ○ There are 5 possible genotypes and 3 possible blood types.
- ○ There are 4 possible genotypes and 6 possible blood types.

Term 15 of 20

What determines the ABO blood group in humans?

- ○ The ABO blood group is determined by a single allele: O.
- ○ The ABO blood group is determined by two alleles: A and B.
- ○ The ABO blood group is determined by three alleles: A, B, and i.
- ○ The ABO blood group is determined by four alleles: A, B, O, and C.

Term 16 of 20

What is the end result of meiosis?

- ○ Meiosis results in four haploid daughter cells, each with half the number of chromosomes.
- ○ Meiosis results in two diploid daughter cells, each with the same number of chromosomes.
- ○ Meiosis results in four identical daughter cells, each with the full set of chromosomes.
- ○ Meiosis results in two haploid daughter cells, each with twice the number of chromosomes.

Term 17 of 20

What happens during Prophase I of meiosis?

- ○ Homologous chromosomes separate without exchanging material.
- ○ Homologous chromosomes condense and do not interact.
- ○ Homologous chromosomes pair up and exchange genetic material through crossing over.
- ○ Homologous chromosomes duplicate and remain unpaired.

Term 18 of 20

What is the significance of the centromere in cell division?

- ○ The centromere is the region where sister chromatids are joined and where spindle fibers attach during cell division.
- ○ The centromere is the region where chromosomes duplicate before cell division.
- ○ The centromere is the area where spindle fibers detach during cell division.
- ○ The centromere is the site where sister chromatids separate and move to opposite poles.

Term 19 of 20

What is a problem with the blending hypothesis?

- ○ It accounts for how traits are permanently lost in offspring.
- ○ It does not account for how traits can reappear in later generations, as traits do not blend but are inherited as discrete units.
- ○ It explains how traits are always inherited in identical form.
- ○ It describes how traits are always expressed equally in each generation.

Term 20 of 20

What are multiple alleles?

- ○ Most genes exist in populations in only one allelic form.
- ○ Most genes exist in populations without any allelic variation.
- ○ Most genes exist in populations in more than two allelic forms.
- ○ Most genes are found in two identical allelic forms.

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