

Topic 1.2 Assessment

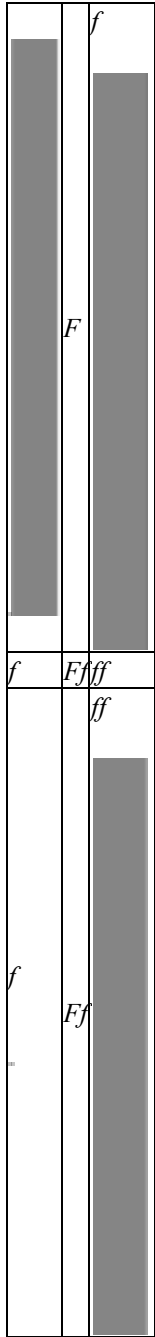
Check Your Understanding Answers

Understanding Key Ideas

1. Mendel chose the plants he bred to perform controlled experiments. He selectively bred plants that had traits for which he wanted to test the outcome when performing test crosses.
2. Using true-breeding plants allowed Mendel to run controlled experiments and to know the genotype of the plants he was crossing.
3. a) Dominant is the allele or trait that is expressed regardless of the identity of the other allele for the characteristic; recessive is the allele or trait that is expressed only when two alleles are present. Recessive is the expression of the allele or trait that is “hidden” or suppressed if the dominant allele is present. In pea plants, purple flowers are dominant to white flowers, which are recessive.

b) Genotype is the specific combination of alleles an organism has for a trait. Phenotype is the physical description of an organism’s trait. The genotype *Bb* results in the phenotype of purple flowers in pea plants.
c) Homozygous describes an organism with two of the same alleles for a particular trait, such as *BB*. Heterozygous describes an organism with two different alleles for a particular trait, such as *Bb*.
4. a) *Hh*
b) widow’s peak; since the *H* is capitalized it is the dominant allele, which means that a heterozygous individual will express the dominant trait in their phenotype.
5. Both of the parents have a genotype of *Ee*. In a cross between two heterozygous parents, there is a 25% chance of each offspring having attached earlobes (*ee*).
6. The genotypes are *tt* and the phenotypes are the inability to roll the tongue.
- 7.
8. a) incomplete dominance b) complete dominance
9. Traits controlled by genes located on the sex chromosomes are called sex-linked traits. Traits controlled by genes on the X chromosome are called X-linked traits. Because genetic males have only one X chromosome, they are affected by recessive X-linked traits more often than are genetic females. Females are less likely to express a recessive X-linked trait, because the other X chromosome may mask the effect of the trait.

Connecting Ideas



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BC Science Connections 10 Teaching Notes Topic 1.2 How is hereditary information passed from one generation to the next?

- 10. a) X^bY
- b) red-green colour vision deficient

Making New Connections

11. By knowing the genotype of one of the parents and that the genotype of the second parent is narrowed to two choices. A breeder can make two Punnett squares that can help determine the unknown genotype based on the

phenotype and inferred genotype of the offspring. If the unknown genotype is homozygous dominant, the offspring will all show the dominant phenotype. If the unknown genotype is heterozygous dominant, 50% of the offspring will show the recessive phenotype.

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	P	p
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