Experiment worksheet

1.6 Alleles can produce dominant or recessive traits

Pages 14–15 and 184

Experiment 1.6: Zazzle genetics

Materials

- A bag containing 6 different coloured counters
- Permanent marker
- Toothpicks
- Pipe cleaners
- Pink and white large marshmallows
- Small marshmallows
- Blue and black felt-tipped pens

Method

1 Choose a counter from the bag. Use the permanent marker to draw an ‘A’ on one side and an ‘a’ on the other side. This represents the inheritance of a long antenna (A) or a short antenna (a) from the parent.

2 Flip the counter to determine which allele is passed on to your Zazzle from the father. Write your results in the table in the results section.

3 Use a second counter to represent two body segments (L) or one body segment (l). Flip the counter to determine which allele is passed on from the father. Write your result in the table.

4 Use three of the remaining counters to represent the following characteristics of the father and write your results in the table.

   - Four eyes (E) or two eyes (e)
   - Straight tail (T) or curly tail (t)
   - One hump (H) or two humps (h)

5 Repeat steps 1–4 for the alleles passed from the mother to your Zazzle.

6 The final counter is used to determine the sex of your Zazzle. The mother has two X chromosomes. This means she can only pass on an X chromosome to your Zazzle baby. Draw an ‘X’’ on one side of the counter and a ‘Y’ on the other. Flip the counter to determine which chromosome is passed from the father to the child. You have now determined the sex of your Zazzle. A girl will have a pink marshmallow body. A boy will have a white marshmallow body.

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7 Determine the phenotype of your Zazzle.

8 Use the materials to construct your Zazzle.

Results

Alleles inherited from the parent

Chromosome	Trait and letter representing it	Allele donated by father	Allele donated by the mother	Phenotype of baby Zazzle
1	Antenna (A or a)			
2	Body length (L or l)			
3	Eyes (E or e)			
4	Tail (T or t)			
5	Hump (H or h)			
6	Sex (X or Y)		X	

Discussion

1 How many chromosomes were present in each of the:

a mother's somatic cells?

b father's gametes?

c baby Zazzle cells?

2 Write down your baby Zazzle's genotype for each trait.

3 Why does the baby Zazzle have two alleles for each trait?

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4 Draw a diagram of your baby Zazzle.

Conclusion

Describe how dominant and recessive traits are inherited.

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