

- ii. *the purple-flowered plants do have an allele for the white trait.*

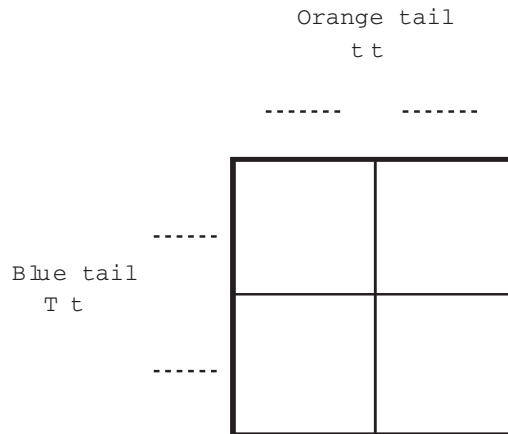
	<u>F</u>	f
f	Ff	ff
f	Ff	ff

Half the offspring will have white flowers and half will have purple flowers. Because there are white-flowered offspring, the purple-flowered parents must have been carrying a recessive white allele. (About half the offspring will have white flowers if the purple-flowered parent is heterozygous.)

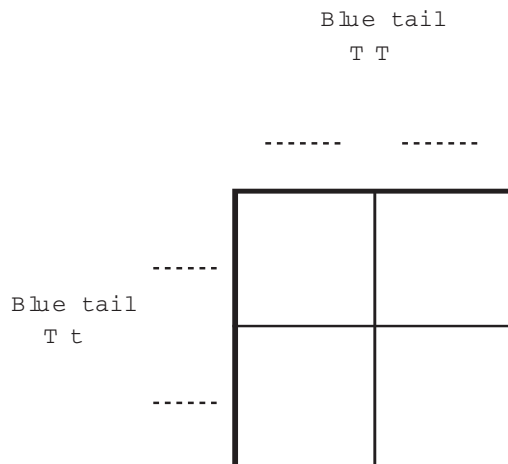
## Punnett Squares—Step by Step

Generation 3 includes some critters with orange tails and some with blue tails.

2. Complete this Punnett square for a cross between an orange-tailed critter and a heterozygous blue-tailed ( $Tt$ ) critter.



- a. Use pencil to shade in the squares for offspring with blue tails.
  - b. About what **fraction** of the offspring are predicted to have blue tails?
  - c. About what **fraction** are predicted to have orange tails?
3. Complete this Punnett square for a cross between a homozygous blue-tailed ( $TT$ ) critter and a heterozygous blue-tailed ( $Tt$ ) critter



- a. Use pencil to shade in the squares for offspring with blue tails.
- b. About what **fraction** of the offspring are predicted to have blue tails?
- c. About what **fraction** are predicted to have orange tails?

# Guide to the Lost Children (Key)

Fill in the table below with the possible allele combination(s) for each person. This will help you to complete Student Sheet 68.2.

- Type A = AA or AO (A is dominant over O)  
 Type B = BB or BO (B is dominant over O)  
 Type AB = AB (A and B are co-dominant)  
 Type O = OO (O is recessive)  
 Rh+ = Rh<sup>+</sup>Rh<sup>+</sup> or Rh<sup>+</sup>Rh<sup>-</sup> (Rh<sup>+</sup> is dominant)  
 Rh- = Rh<sup>-</sup>Rh<sup>-</sup> (Rh<sup>-</sup> is recessive)

Table 1: Parents		
	Blood Type and Possible Alleles	Rh Factor and Possible Alleles
Belinda	A <u>AA or AO</u>	Rh <sup>+</sup> <u>++ or +-</u>
John	O <u>OO</u>	Rh <sup>+</sup> <u>++ or +-</u>
Mai	AB <u>AB</u>	Rh <sup>-</sup> <u>--</u>
Paul	B <u>BB or BO</u>	Rh <sup>-</sup> <u>--</u>

Table 2: Children		
	Blood Type and Possible Alleles	Rh Factor and Possible Alleles
Girl 1	AB <u>AB</u>	Rh <sup>+</sup> <u>++ or +-</u>
Girl 2	A <u>AA or AO</u>	Rh <sup>-</sup> <u>--</u>
Girl 3	O <u>OO</u>	Rh <sup>+</sup> <u>++ or +-</u>
Girl 4	B <u>BB or BO</u>	Rh <sup>-</sup> <u>--</u>
Boy 5	AB <u>AB</u>	Rh <sup>+</sup> <u>++ or +-</u>
Boy 6	A <u>AA or AO</u>	Rh <sup>+</sup> <u>++ or +-</u>
Boy 7	AB <u>AB</u>	Rh <sup>-</sup> <u>--</u>
Boy 8	O <u>OO</u>	Rh <sup>-</sup> <u>--</u>

# DNA—Person 1

1. First cut along the solid border around the edges.
2. Then cut out each strip of letters along the dotted lines and tape each to the one before, to make a long ribbon of letters. The numbers at the end of each line will help you keep the strips in order. As you tape on each strip, you will cover the previous number.



T T G T G G C C C C C C A A T T G T T	1
G T T A G A A A G G A G G G A A G T	2
A T G A G A T T T T T T T T A G G C	3
A C A C A C A A G A G A T A T A G A G	4
A A A A A T T G T G G T G T A G A G C	5
C C C C G A A A A A A A A A A C A	6
C A C A C A A G A T A G A T G T G T G	7
T G C G C G C G G G G G G A A T A A	8
C A G T G T T G T A T T A A T T T A T	9
A G A A A A T A A G A T A T A T G G G	10

## DNA—Person 2

1. First cut along the solid border around the edges.
2. Then cut out each strip of letters along the dotted lines and tape each to the one before, to make a long ribbon of letters. The numbers at the end of each line will help you keep the strips in order. As you tape on each strip, you will cover the previous number.



T T G T G G C C C C C C A A T T G T T	1
A T T A G A G G G G A G G G G A A G T	2
A T G A G A T T T T T G T T T A T G C	3
A C A C A C A T G A G A T A T A A A G	4
A A C A A T T G T G G T G T A G A G C	5
C C C C G A A A A C C C C A A A A C A	6
C A C A A A A G A T A G A T G T G T G	7
T G A G C G C G G G G G G G A A T C T	8
C A G T G T T G T A T T A A C C T A T	9
A G A A A A T T T G A T A T A T G G G	10

# Children's DNA Fingerprints

Cut out these DNA fingerprints and use them to determine who could be the children of John and Belinda or of Mai and Paul.

