

Key knowledge**2.4 Pedigree charts, genetic cross outcomes and genetic decision-making****2.4.1 pedigree charts and patterns of inheritance including autosomal dominant, autosomal recessive, X-linked and Y-linked traits**

2.4.1.1. Distinguish between autosomal dominant and autosomal recessive.

2.4.1.2. Explain what is meant by codominance.

2.4.1.3.

(a) Detail using punnet squares the crossing of a codominant red snapdragon (R_1R_1) with a codominant white snapdragon (R_2R_2), including the genotypic ratio and phenotypic ratio.

		R_1	R_1
	R_2		
	R_2		

Genotypic ratio:

Phenotypic ratio:

(b) Detail the F2 generation from the offspring produced in (a) including the genotypic ratio and phenotypic ratio.

		R_1	R_2
	R_1		
	R_2		

Genotypic ratio:

Phenotypic ratio:

2.4.1.4. Explain how the phenotype changes (expresses itself) for heterozygous genotypes in codominance.

2.4.1.5. Identify the three allele for human blood type and their relationship to each other with regards to dominance.

2.4.1.6. Complete the table below for human blood groups.

<i>Blood type</i>	<i>Possible genotypes</i>	<i>Antigens to RBC</i>	<i>Antibodies in blood</i>
A			
B			
AB			
O			

2.4.1.7. Identify where the antigens and antibodies are found in blood.

2.4.1.8. Explain why sex linkage and codominance do not produce simple Mendelian ratios.

2.4.1.9. Thomas Morgan studies fruit flies *Drosophila* in genetic experiments. White eyes are the recessive X sex linked trait (X^r). Red eyes are dominant (X^R).

(a) Use a punnet square to show the results if a white eyed female was mated with a red eyed male.

		<i>male</i>	
<i>female</i>			

Genotypic ratio:

Phenotypic ratio:

(b) Use a punnet square to show the results if a reciprocal cross (a red eyed female was mated with a white eyed male).

		<i>male</i>	
<i>female</i>			

Genotypic ratio:

Phenotypic ratio:

(c) What did Morgan conclude from these results?

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