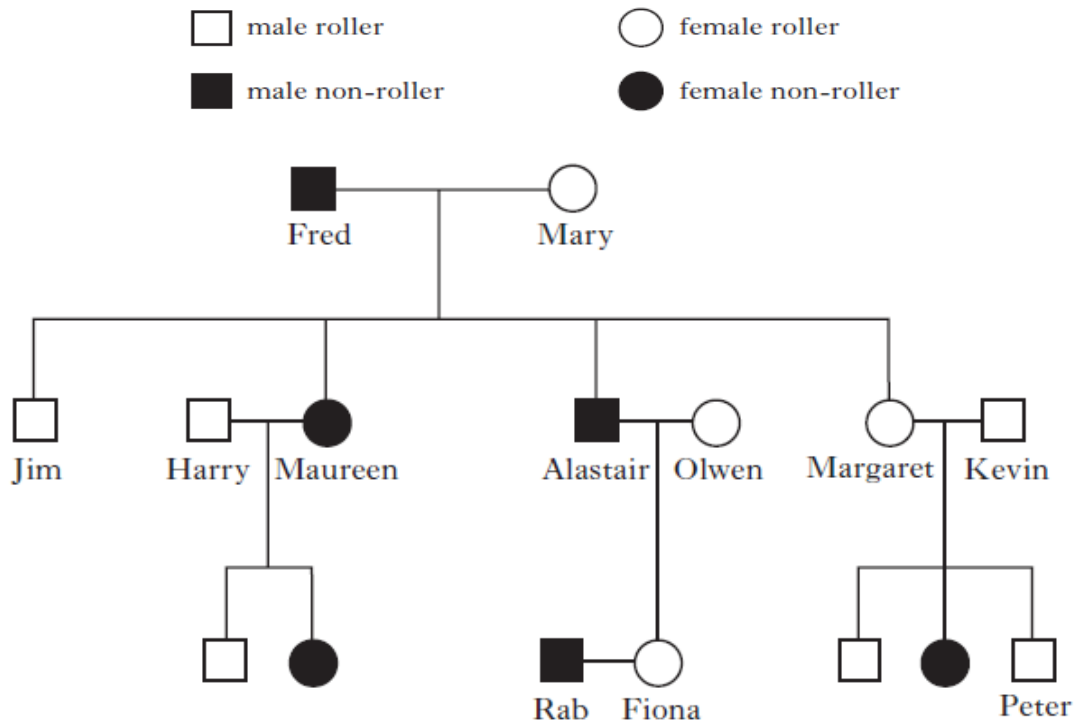


Key Area 2.4 - Homework

1. Tongue-rolling is an inherited characteristic. The diagram below shows the pattern of its inheritance in one family.



(a) (i) Using R for the dominant form of the gene and r for the recessive form, state the genotypes of:

- 1 Maureen
 - 2 Jim
 - 3 Kevin
- KU2

(ii) If Rab and Fiona have a child, what are the chances of the child being able to roll its tongue?

Space for working
 PS1

(iii) Which of the original parents could be described as true-breeding?

Tick (✓) the correct box.

KU1

| | | | |
|------|--------------------------|---------|--------------------------|
| Fred | <input type="checkbox"/> | Mary | <input type="checkbox"/> |
| Both | <input type="checkbox"/> | Neither | <input type="checkbox"/> |

- (iv) Name a tongue-roller from the F1 generation.
PS1
- (b) Explain why the proportions of the offspring phenotypes from genetic crosses are not always exactly as predicted.
KU1
- (c) What term is used for the different forms of the same gene?
KU1

2. The diagram below shows the two ways in which hands can be clasped together.



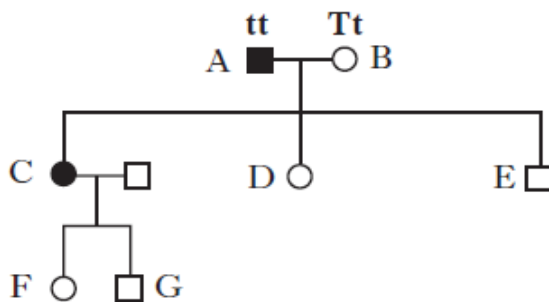
Left thumb on top



Right thumb on top

(ii) The diagram below shows whether members of a family clasp their hands with the right or left thumb on top.

T represents the left thumb form of the gene.
t represents the right thumb form of the gene.



- left thumb male
- right thumb male
- left thumb female
- right thumb female

What information from parent B proves that the left thumb on top is the dominant form of the gene?

PS1

- (iii) Use the information in the diagram to complete the following table.
KU1

| <i>Person</i> | <i>Genotype</i> |
|---------------|-----------------|
| C | |
| E | |
| F | |

- (v) When 1000 people were surveyed, 625 people were found to clasp their hands with the left thumb on top.
What is the simple whole number ratio of left to right thumb people?
Space for calculation

_____ : _____
left thumb : right thumb
PS1