Worksheet 2.10.7 Modelling inheritance

1 Alleles >

a) Match each word with its definition

|  |  |  |
| --- | --- | --- |
| i allele |  | A Sex cells |
| ii dominant |  | B Different versions of a gene |
| iii recessive |  | C A version of an allele that masks another |
| iv gametes |  | D A version of an allele that only shows itself when you inherit two copies of it |

b) In tigers, a recessive allele causes a lack of pigmentation that leads to the tiger being white. The dominant allele, F, codes for normal colour and the recessive allele, f, codes for white. Identify the colour of the tigers with the alleles shown below:

i) FF

ii) Ff

iii) ff

2 Genetic crosses >>

Tongue rolling is caused by a dominant allele, T.
The recessive version of the allele is given the letter, t.

a) For each of the parents below, identify whether they are tongue rollers or non-tongue rollers.

 Mother Father

Alleles Tt tt

b) Identify the alleles that could be in the gametes of each parent

 Mother Father

Alleles …….. …….. …….. ……..

c) Carry out a genetic cross to work out the possible alleles that the offspring will inherit.

d) What is the probability that a child from these parents will be able to roll their tongue?

3 Genetic counselling >>>

Genetic counselling can use genetic crosses to predict the probability of parents passing on certain conditions to their offspring. If we know the alleles that the parents have, we can work out the probability of their children being affected. This type of analysis can be used for parents that are at risk of passing on cystic fibrosis, sickle cell anaemia or Huntington’s disease, for example.

Carry out some research on genetic counselling and why it is useful. You could research the history of genetic counselling and some examples of when it might be used.