**Genetics**

Lesson 2

1. Calculate the phenotypic ratio of a cross between a female carrier for red green colour blindness and a normal vision male.
2. Haemophilia is a sex-linked trait where XH gives normal blood clotting and is dominant to the haemophilia allele Xh.  
   a. Give the genotypes of

1) a woman with normal blood clotting whose father had haemophilia

2) a normal man whose father had haemophilia.

b. What is the probability that a mating between these two individuals will produce a child, regardless of sex, that has haemophilia?

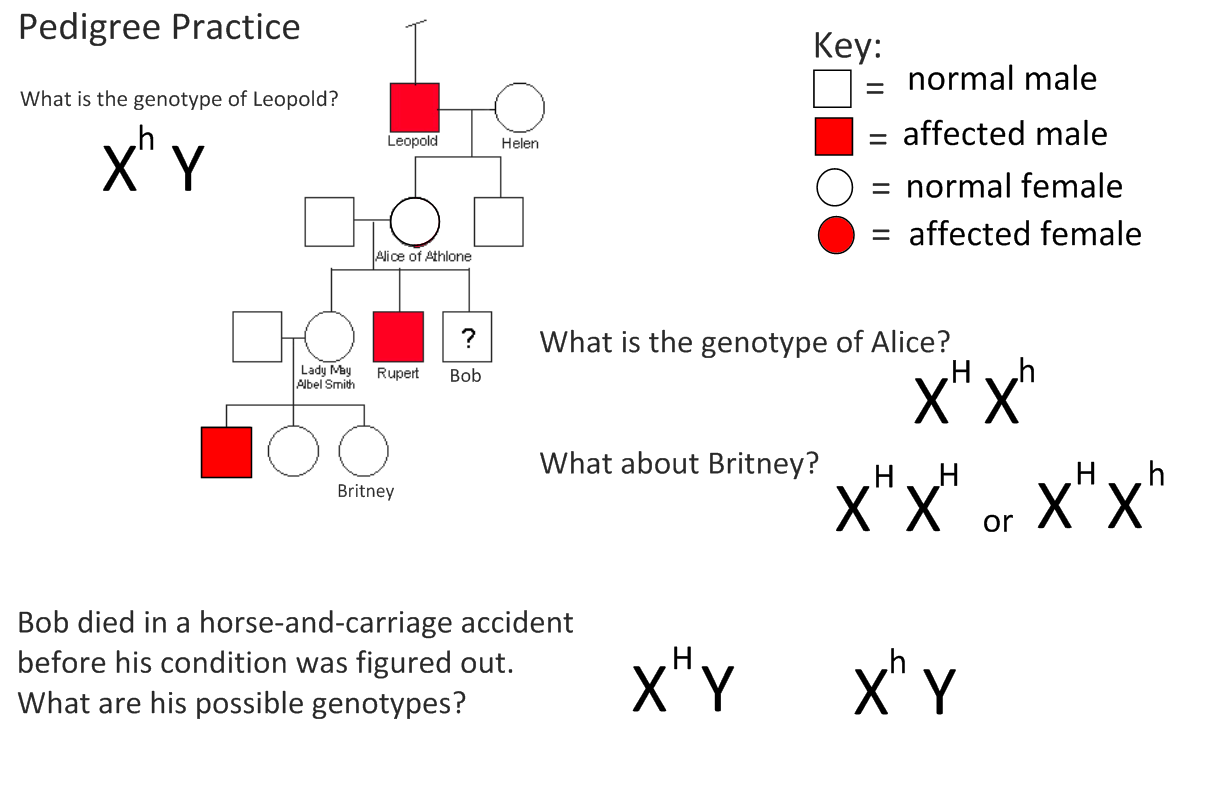
c. If this couple has a daughter, what is the probability that the daughter will be a carrier of the haemophilia trait? What is the probability a daughter would have haemophilia?

d. If this couple has a son, what is the probability he will have haemophilia?

1. For the genotypes below state what blood group they would be:
   1. IA IA
   2. IB IB
   3. IA IB
   4. IA IO
   5. IB IO
   6. IO IO
2. Complete the following crosses:

Parents: blood group O and blood group AB

Parents: blood group A and blood group B (both heterozygous with the IO allele)



**Genetics**

Lesson 2

1. Calculate the phenotypic ratio of a cross between a female carrier for red green colour blindness and a normal vision male.

Phenotypes :

|  |  |  |
| --- | --- | --- |
|  | XB | Xb |
| XB | XB XB | Xb XB |
| Y | XB Y | Xb Y |

Normal female (carrier) x Normal male

Genotypes : XBXb x XBY

Gametes XB Xb XB Y

Female normal vision 50%

Male normal vision 25%

Male colour blind 25%

1. Haemophilia is a sex-linked trait where XH gives normal blood clotting and is dominant to the haemophilia allele Xh.  
   a. Give the genotypes of

1) a woman with normal blood clotting whose father had haemophilia XHXh

2) a normal man whose father had haemophilia. XHY

|  |  |  |
| --- | --- | --- |
|  | XH | Xh |
| XH | XH XH | X**H** Xh |
| Y | XHY | XhY |

b. What is the probability that a mating between these two individuals will produce a child, regardless of sex, that has haemophilia?

P = 25%

c. If this couple has a daughter, what is the probability that the daughter will be a carrier of the haemophilia trait? What is the probability a daughter would have haemophilia?

Carrier P= 0.5,

Haemophiliac P = o

d. If this couple has a son, what is the probability he will have haemophilia?

Haemophiliac son P =0.5

1. For the genotypes below state what blood group they would be:

Blood group A

Blood group B

Blood group AB

Blood group A

Blood group B

Blood group O

* 1. IA IA
  2. IB IB
  3. IA IB
  4. IA IO
  5. IB IO
  6. IO IO

1. Complete the following crosses:

|  |  |  |
| --- | --- | --- |
|  | Io | Io |
| IB | Io IB | Io IB |
| IA | Io IA | Io IA |

1. Parents: blood group O and blood group AB

Blood group B 50%

Blood group A 50%

Parents: blood group A and blood group B (both heterozygous with the IO allele)

|  |  |  |
| --- | --- | --- |
|  | IA | Io |
| IB | IA IB | Io IB |
| Io | IA Io | Io Io |

Blood group AB 25%

Blood group A 25%

Blood group B 25%

Blood group O 25%

