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I'm going to explain sex linked inheritance Part 2 from the unit Mendelian genetics and its extension.

Outlines of this module, haemophilia inheritance in man colour blindness inheritance in men barred
plumage inheritance in birds.

At the end of this module, you can describe the mechanism of haemophilia inheritance.Illustrate the colour blindness inheritance. Explain sex linkage in birds.

Haemophilia was first reported by John Koto in 1893.The main symptoms of haemophilia delayed blood
Clotting that is continuous bleeding occurs. For this reason, it is known as bleeders' disease.
Normal clotting time. Is about 2 to 6 minutes. That is, whenever there is a cut within two to six minutes blood .get clotted. In case of haemophiliacs, that is, patients suffering from haemophilia, the clotting time are between 20 minutes to 24 hours. So for such a long period bleeding occurs because of this death may occurs that is the death is due to haemorrhage may be internal haemorrhage or external haemorrhage.
Haemophilia is a sex linked recessive character by a mutant gene. The normal, wild dominant gene plus or H. The mutant allele of haemophilia is small h. because it is a recessive gene.It was regarded in the 18th century and 19th century as royal disease. As first it was reported in Queen Victoria and passed on to the several members of the royal families across European countries. The locus for this disorder is
present only on the X chromosome. Male is hemi zygotic having only one gene female is Homozygotic
having two genes. Therefore, Haemophilia gene to express. Male requires only one, whereas the female requires two small h genes. It is very common in male compared to female. Inheritance of this disease follows crisscross pattern.

There are three types of haemophilia - Haemophilia A, haemophilia B, haemophilia C.

Haemophilia A is also known as classical haemophilia. it occurs in four out of five cases of haemophilia. The reason for Haemophilia A is lack of anti-haemophilic globulin and that is factor 8.
This is a severe disorder and it occurs in one. In 5000 male births.

Haemophilia B, first reported by Steven Christmas in 1952. It is also known as Christmas disease.It is due to lack of plasma thromboplastin component. That is factor 9. It is less severe.

Haemophilia C is very rare. It is due to lack of plasma thromboplastin antecedent. That is factor number eleven.

Coming to the inheritance of the haemophilia. A normal father and carrier mother have the progeny
as mentioned in the Punnett square. Daughter Normal daughter career daughter Normal son and haemophiliac son..

If the father is haemophiliac. And mother is normal. The progeny will be carrier daughters and normal sons in equal proportion.

If Father is haemophiliac and mother is carrier. Then the progeny will have career daughter haemophilic daughter, Normal son and haemophiliac son.

The next example is colour blindness. John Dalton described in 1974.And it was discovered in 1911 by Horner Wilson as sex linked recessive disorder. Patients with colour blindness cannot distinguish between red and green colours Alleles for colour blindness are absent in the males as Y chromosome
do not have the alleles .

Colour blindness. In case of the males only present on the x chromosome and absent on the Y chromosome as the allele is present only on the X chromosome. Man is hemizygous have only one gene for colour blindness on the single X chromosome. It is common in men than in women. Male have the possibility of getting this disorder. 50% whereas female have only 33%. It follows crisscross inheritance pattern.

Daughter carrying single gene is regarded as the career for this disorder. It is never transmitted to son from father. Because son always gets Y chromosomes from the father.

Tri chromatism means = Normal vision.

In the dichromatism. - It is difficult to distinguish all the three primary colours that is red, green and blue.

In monochromatism, this is very rare. No colour vision occurs and the world is seen in white.Black and grey shapes only.

OK, normal vision. You can see all the colours. In case of protanopia unable to perceive red light.

In case of Deuteranopia unable to pursue green light and tritanopia unable to pursue blue light also.

Coming to the genetics of colour blindness. In normal man will get married to a colour-blind woman.

The progeny will have career daughters and colour-blind sons. Colour blind man gets married to a normal woman. The progeny will have. Career, daughters and normal sons.

Colour blind man will get married to the career woman. The daughters are .carrier and colour blind sons are normal and colour blind.

With normal man and carrier woman gets married, the progeny will be normal daughter,carrier, daughter Normal son and Colour blind son in equal proportion.

Coming to the six linkage in birds in Bird, male is homogametic having ZZ chromosomes and female is a

heterogametic having Z W chromosomes.This inheritance pattern is reverse to human beings. Example, barred plumage which is dominant gene present under Z Chromosome feathers are with the black bars on white background.

When barred female is crossed. Non bird male the progeny will be barred male and non-barred females in equal ratio when Barred Male and non-barred female are crossed, the progeny will have barred male barred female non barred male and non-barred female.

When barred male and non- barred female are crossed, the progeny will have barred male and barred female in equal proportion.

Similarly, when Barred Male and barred female are crossed. The progeny will have barred male barred female. And non-barred female.

Thank you.