Sex red-green colour vision has a single recessive

Sex Linked Traits: Sex linked traits show following characteristics: (1)There are differences in reciprocal giving different phenotypic ratios.

(2)Males that carry (inherit) X-linked recessive character homozygous condition, (because Y-chromosome does not contain counterpart allele) Trans X-linked gene to all their daughters but none to their sons. (3)Heterozygous females are c because their sons may express the recessive trait, even when their father is normal. (4)An opposite of non-reciprocal inheritance is found in organisms in which male is homogametic female is heterogametic. This pattern is found in birds, some reptiles, fishes, moths and butt 1. A man defective in red-green colour vision has a single recessive gene in his X chromo Y gene carries no gene for colour vision. Single sex-linked gene in man is said to homozygous state and expresses itself causing colorblindness.

Remember, sex-linked are never transmitted directly from father to son rather they do so through his dough? Thus gene also shows crises-cross pattern of inheritance and there is higher incidence this condition in males than in females. In humans, sex-linked genes are discovered thro pedigree analysis. The pedigree shows how X-linked recessive genes are expressed in May, then carried unexpressed through females (known as carriers) in the next generation, to express in their sons.

2. Morgan (1910) discovered sex-linked genes in Drosophila. White gene was located in the chromosome. Sex-linked genes follow a crises-cross or skip-generation inheritance where male transmits his sex-linked genes to his grandsons through his daughters, never to through his sons. This is the

mode X chromosome is transmitted. This experiment provides evidence to chromosome theory of inheritance and white gene in Drosophila was the ft gene to have been assigned to a chromosome. Morgan was awarded Nobel Prize for the pioneering work in 1934.

3. Gene responsible for Duchene’s muscular dystrophy (DMD) in man is located in the chromosome. This condition causes degeneration of muscles at very early age. A chi playing in the ground has more tendencies to fall down compare to his play mates. At the age of 14, the patient can hardly walk and has to use a wheel-chair for his movement. A majority of carriers of this gene show an increased amount of enzyme serum creative phosphokinast At least 47 sex-linked genes are known in Drosophila and 93 are known in man. 4. It is a condition where blood fails to clot.

The individuals possessing genotype hence do not survive up to the age of maturity and hence do not reproduce. An injection has been developed that contains blood clotting factor (Factor VIII) which when given periodically, a hemophilic individual can lead a normal life and reproduce. This, however, poses a problem. The frequency of the deleterious gene increases. Otherwise, gene h is maintained through carrier (He) females. About 85 per cent of the carrier females can be identified by a significant reduction in blood clotting factor VIII.