**Sex-Linked Traits**

The \_\_\_ and \_\_\_ chromosomes are responsible for the determination of the sex of a human. In addition to determining the sex, the X and Y chromosomes carry some \_\_\_\_ for a few different traits.

While the X and Y behave as a pair during cellular reproduction, they are not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, meaning they do not have the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The X chromosome is \_\_\_\_\_\_\_\_\_\_\_\_ than the Y chromosome, and thus can carry more genes.

One gene that is on the X but not on the Y controls the ability to distinguish the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ green and red. The dominant form produces \_\_\_\_\_\_\_\_\_\_\_\_\_ colour vision; the recessive allele makes individuals \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for red and green.

Possible Genotypes for the Colour-blindness gene are:

Females: Males:

Females have to inherit \_\_\_\_\_\_\_ recessive alleles to be colour-blind, where males only have to inherit \_\_\_\_\_\_\_, since the Y chromosome doesn’t have the matching allele for colour-blindness. Any individual who has one of the recessive alleles and one of the dominant allele (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) is called a “\_\_\_\_\_\_\_\_\_\_\_\_” of the recessive trait, though they do not show it in their phenotype.

Use Punnett squares to determine the probability of colour-blindness for a boy and a girl in the following matches:

Carrier female and full colour vision male

Carrier female and colour-blind male

Colour-blind female and full colour vision male

We can see that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are far more susceptible to colour-blindness than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Other traits, including the genetic disease of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are sex-linked. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is carried by the X chromosome. Additionally one of the primary genes, *though there are many genes responsible*, responsible for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is carried on the X chromosomes. Some sex-linked traits are carried only by the \_\_\_\_\_\_\_\_\_ chromosome. Having hair on the rims of your ears is carried on the Y chromosome. We can see through the use of a couple Punnett squares, that it is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for females to acquire this trait.