MEDICAL BIOLOGY

Done by:

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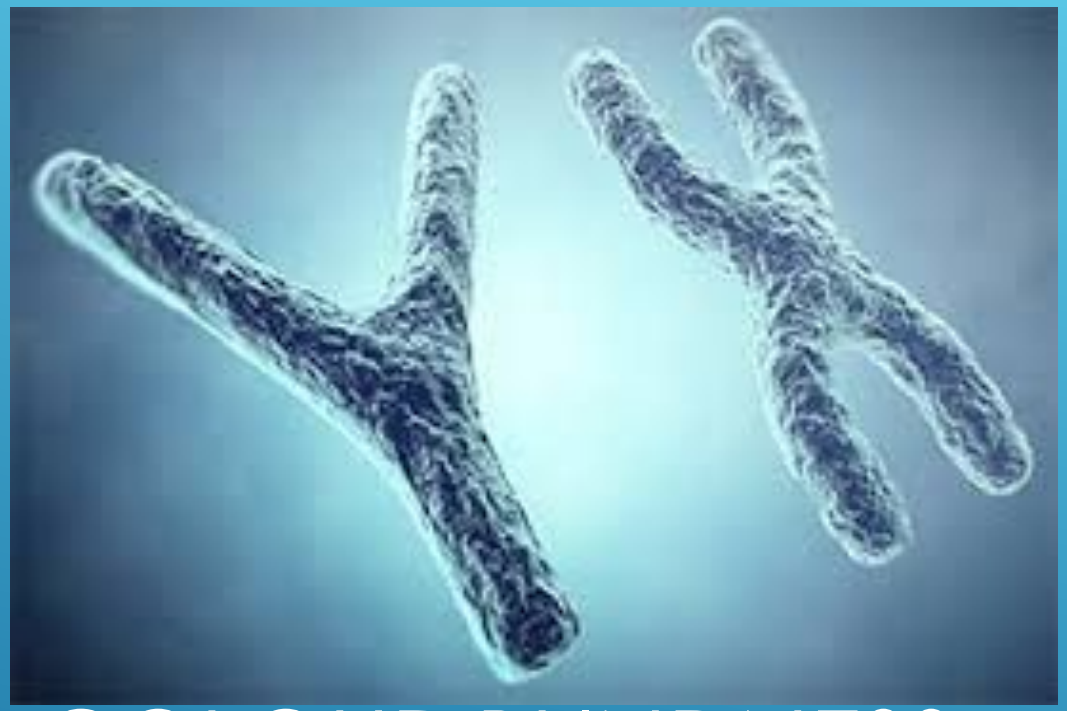
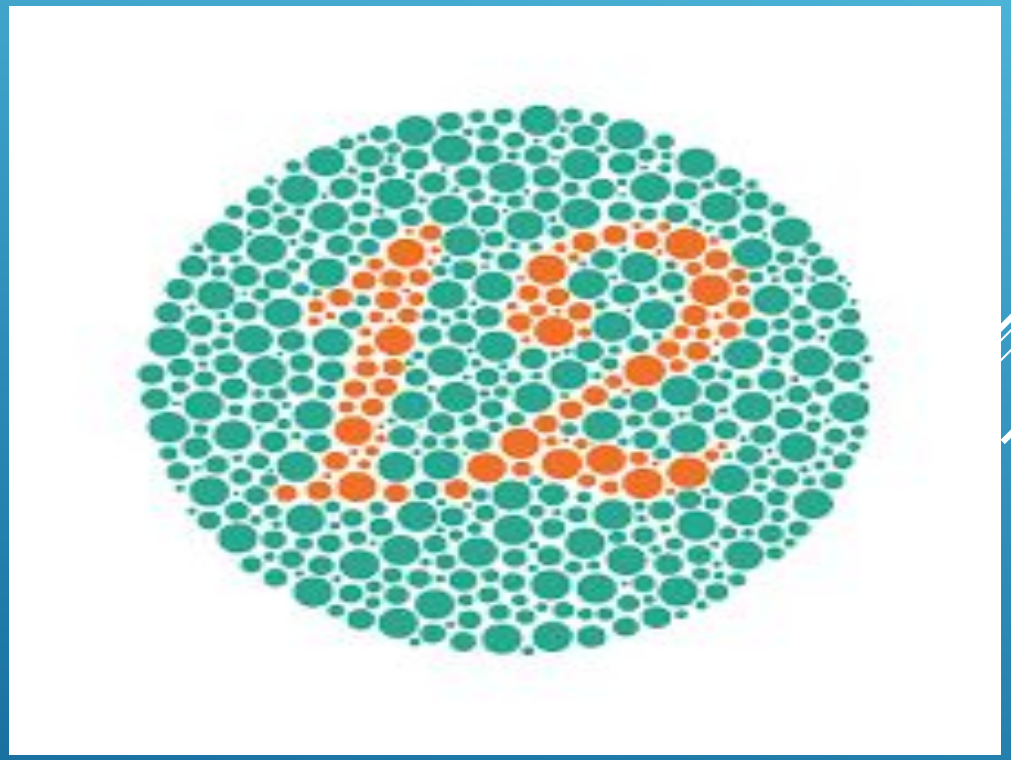


COLOUR BLINDNESS



INTRODUCTION

What is colourblindness?

colour blindness is a defect of vision that makes a person impossible/difficult for a person to distinguish between or among colurs

TYPES OF COLOUR BLINDNESS

1)TRICHOMACY (three colour vision)

Normal colour vision

2)ANAMOLOUS TRICHOMACY(unusual three colour vision)

*Protonomaly(I cone defect)red weak

*Deuteranomaly(M cone defect)green weak

*Tritonomaly(S cone defect)blue weak

SYMPTOMS

The symptoms vary ,some people may be able to see every colour but not distinguish red or green .Other may not be able to see blue or yellow .Lastly ,some people may not be able to see colour at all .They may just able to see shades of black, white and gray. This however is very rare condition in human .

PEOPLE LIVING WITH COLOUR BLINDNESS

*Colour blind people face many difficulties in everyday life

*Problems can arise in even the most simple of activities including choosing and preparing ,food,gardening,sport,driving carandselecting clothimg

*Colour blind people can also find themselves in trouble because they haven't been able to pick up a change in someones mood by a change in colour of their face

BASIC CONES PRESENT IN EYES

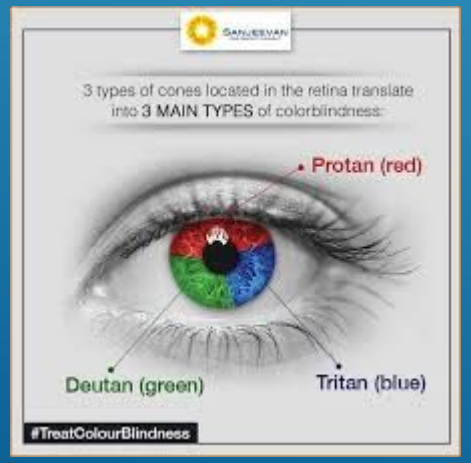
There are three types of cones

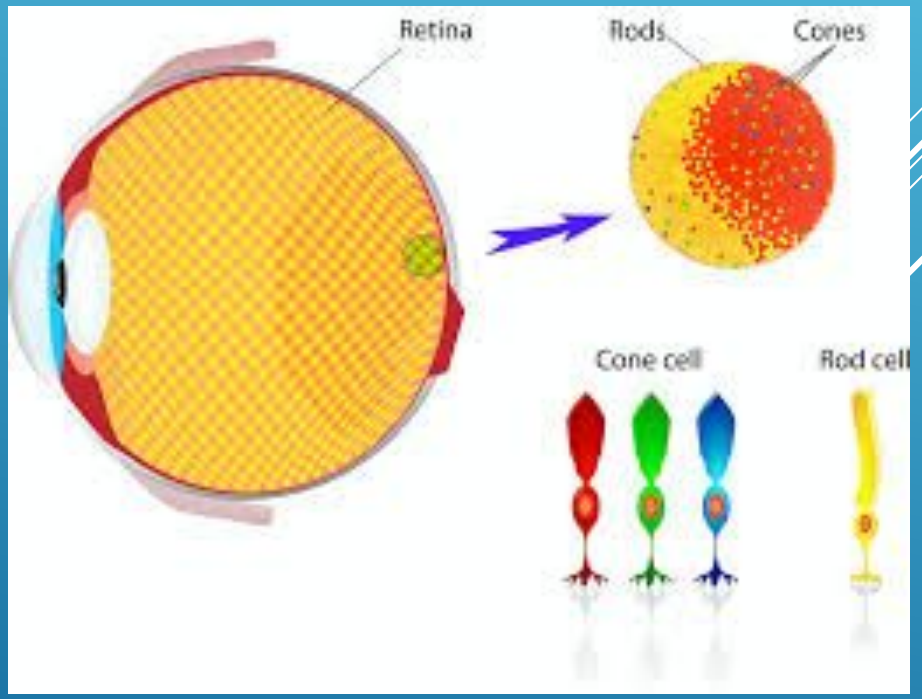
*L cones (sense of long wavelength)red light

*M cones (sense of medium wavelength)green light

*S cones(sense of shorter wavelength)blue light

These are classified on the basis of photoreceptor protein





CAUSES OF COLOUR BLINDNESS

1)Usually genetic condition

$ Red/green/blue colour blindness is passed down from parents.

$the gene responsible is on X chromosome.

$Mutation capable of causing colour bilindness orginates from atleast 19 different chromosome and many different genes.

$more males are affected the females are basically.

$There is 50 percent chance of mother passing this condition to her son.

2)ACQUIRED COLOUR BINDNESS

$Aging

$Eye problems such as glaucoma,macular degeneration ,cataracts,or diabietic retinopathy.

$injury in the eye

$ Side effects of some medicines.

$If you have inherited colour blindness your condition will stay the same throughout yourlife it won't get any better or worse

INHERITED CONDITION IS DUE TO FOLLOWING

In our eyes there are two types of light sensitive cells.

1)rods

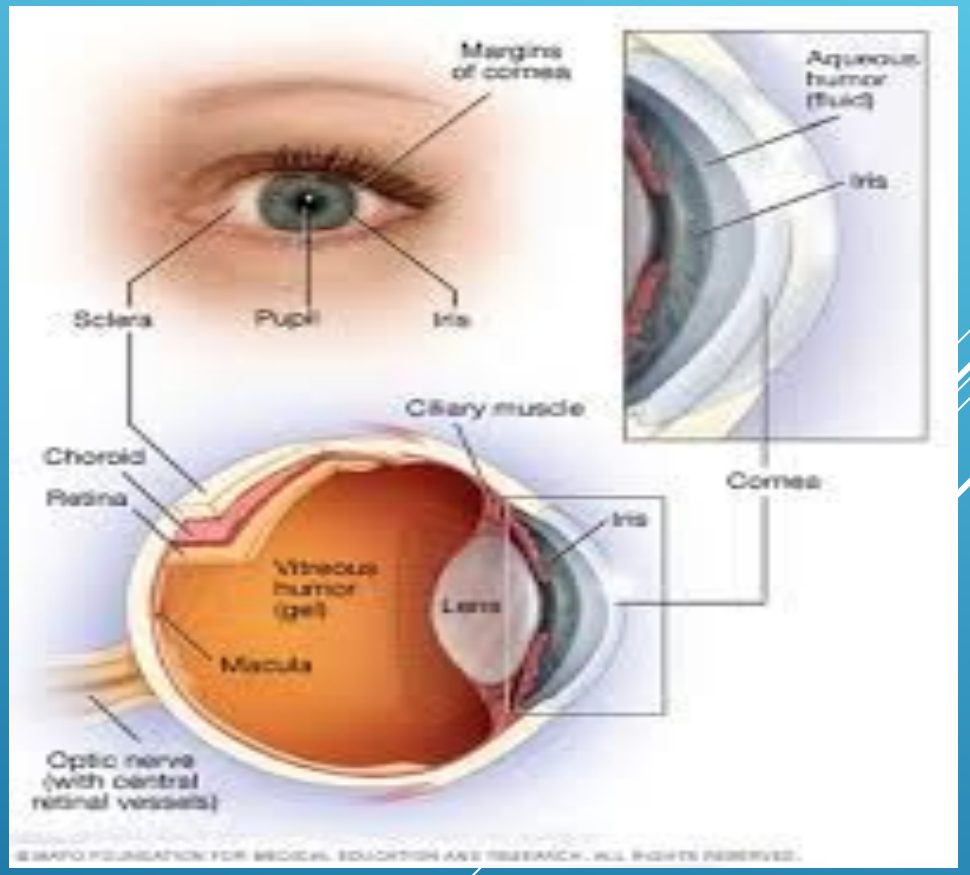
2)cones

Both found in retina which is a layer at back of eye it process images.

The rods are responsible for vision in night as work in low light condition(cannot distinguish different wavelength of light)

The conesare responsible for colour discrimination.

AFFECTED EYE OF A PERSON



INHERITANCE PATTERNS

$Red green colour blindness is usually inherited from parents.

$It is passed from mother to son on 23rd chromosomes which is sex chromosomes which is sex chromosome.

$Chromosomes are the structure which contain genes they contain instruction for the development of cell tissues organ and if you are colour blind it means instruction for cone development are wrong.

$It may bemissing or less sensitive.

$Orr pathaway from cone to brain is not developed properly.

$ For males to be colour blind his X chromosome should have the faulty gene.

$The female might have both X chromosomes normal or one X chromosome might have faulty gene but gene on other chromosomes compensates it so the female is carrier and passes on faulty gene to her son so he is colour blind.

$The daughter might be carrier or colourblind if her father is colourblind and mother is the carrier.

$By this information males more affected by colour blindness than female as the number of X chromosomes is more in females

TESTS FOR COLOUR BLINDNESS

1)PSEUDOISOCHROMATIC PLATE TEST

2)ISIHARA TEST

3)TRANSFORMATION PLATE

4)VANISHING PLATE

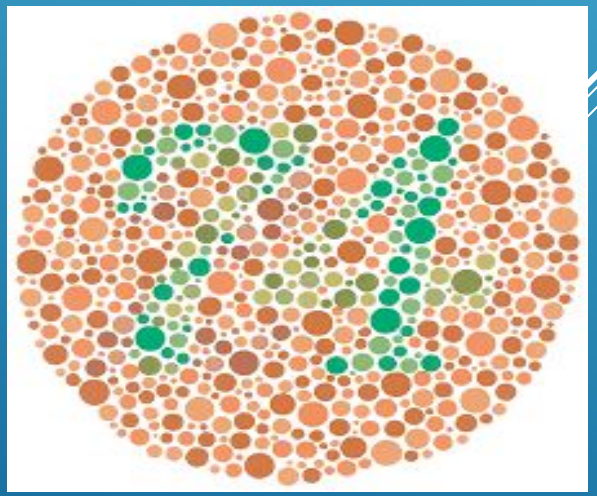
ISHIARAS TEST

$There are many tests available to measure colour vision defects but most common is the ishiara test plate test.

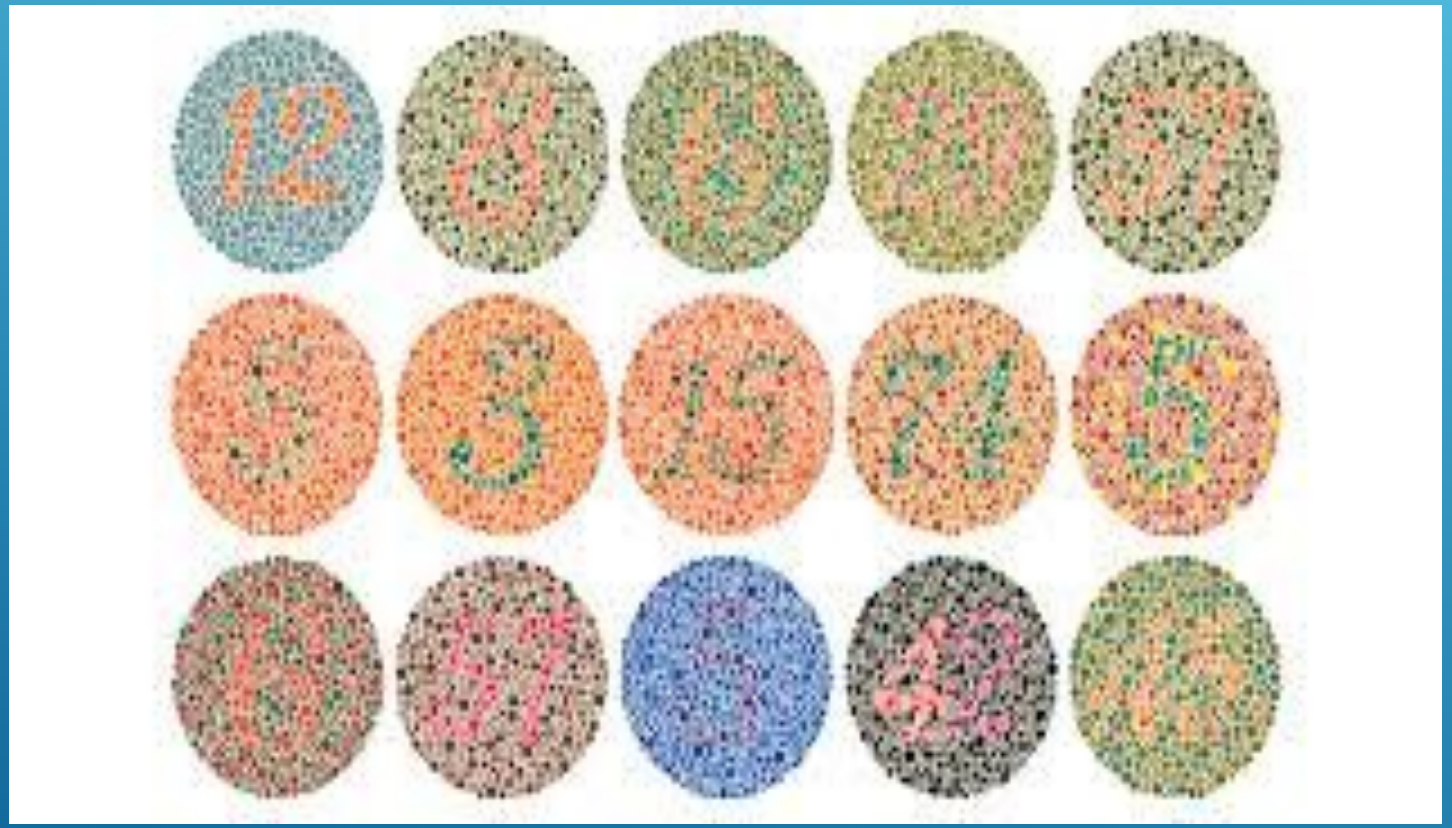
$This test is for red/green colour blindness but not blue colour blindness.

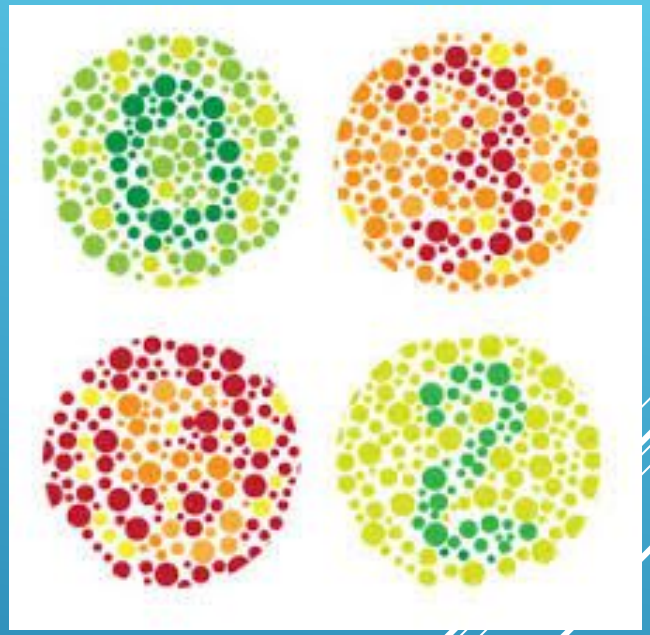
$This is the test most likely to be used for routine colour vision screening in schools or medicals.

$This test contains 38 plates of circles created by irregular coloured dots in two or more colours.



PLATES OF ISIHARA TEST

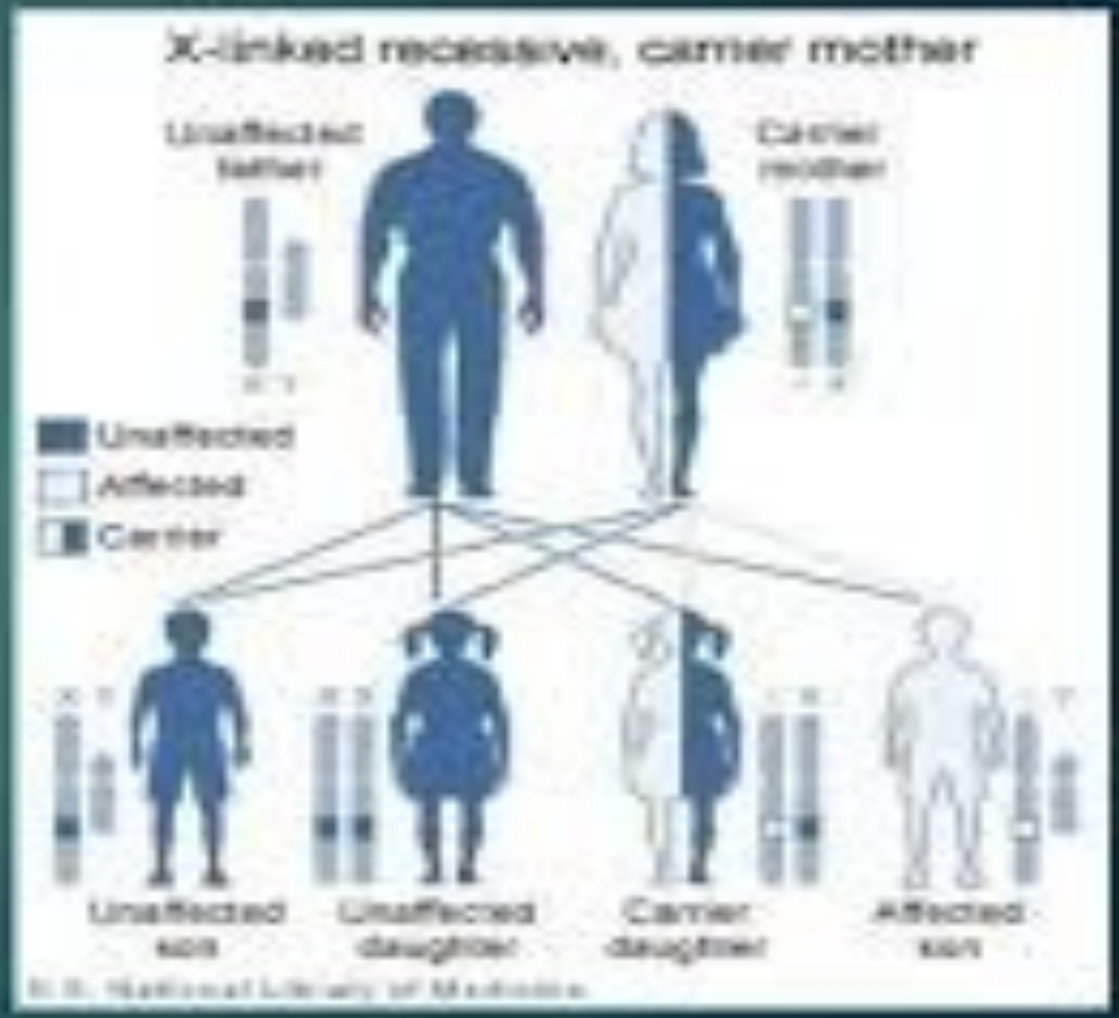




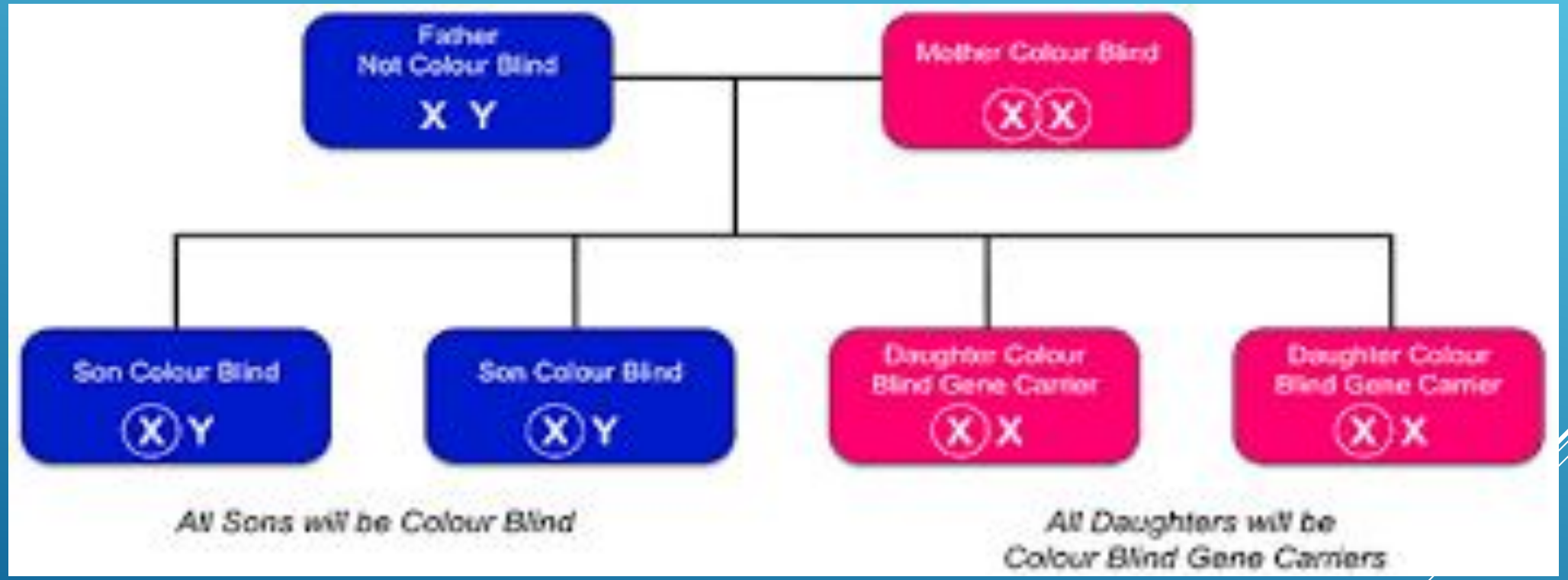
Cause

- genetic

  Colour blindness is caused by the X-linked gene. Males are usually affected because they only need one X, where females need both. This child must have had a parent carrier.
- Some drug also cause colour blindness like antidiabetic, erythromycin,sildenafil. cardiac glycoside .
- physical



EXAMPLE OF COLOUR BLINDNESS



TREATMENT OF COLUR BLINDNESS

1)There is currently no treatment for colour blindness.

2)Colour filters or contact lenses can be used in some situations to enhance the brightness between some colours.

3)For acquired colour vision deficiency once the cause has been established and treated.your vision may return to normal.


Thank
you