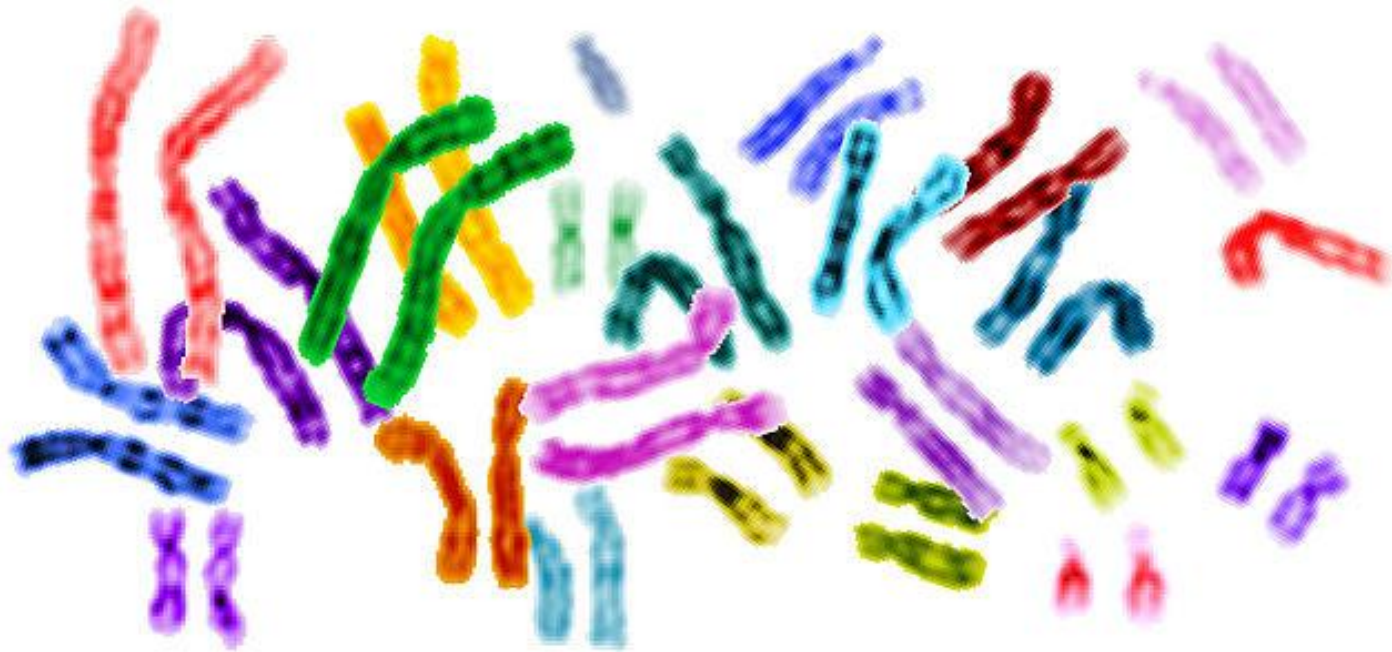
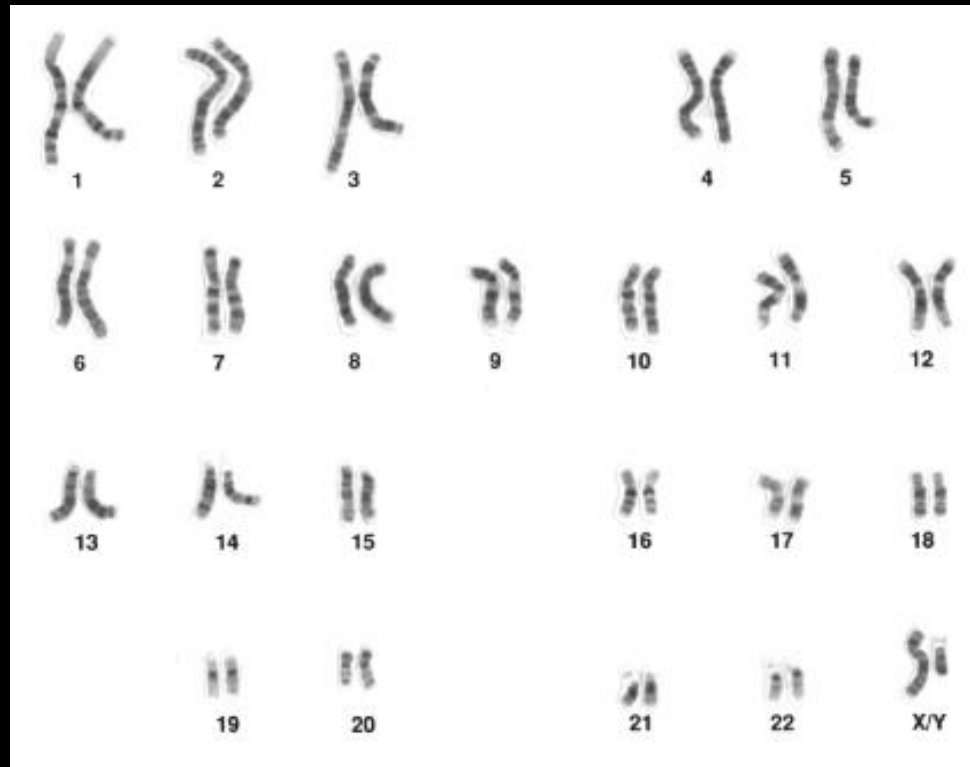


Karyotypes



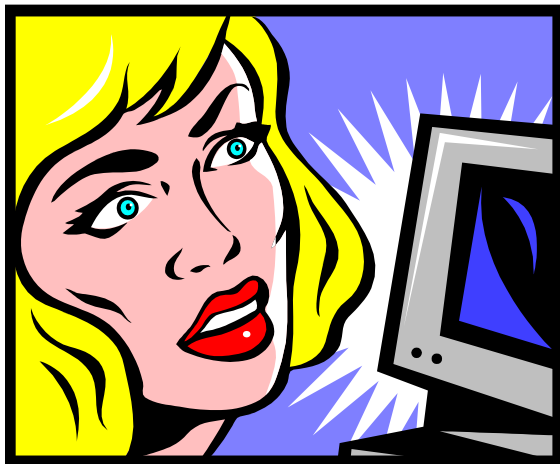
Karyotype

- Picture of chromosomes arranged in pairs

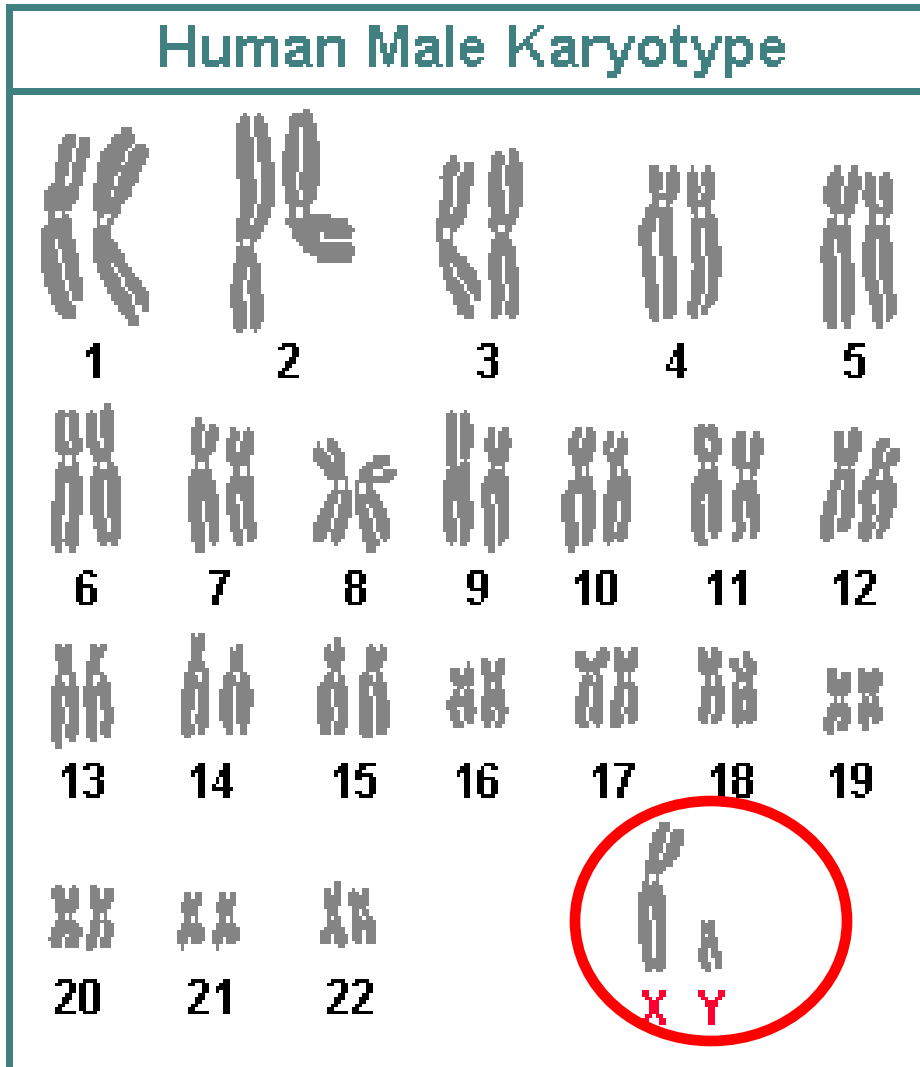


Sex chromosomes

- Chromosomes that determine an individual's sex

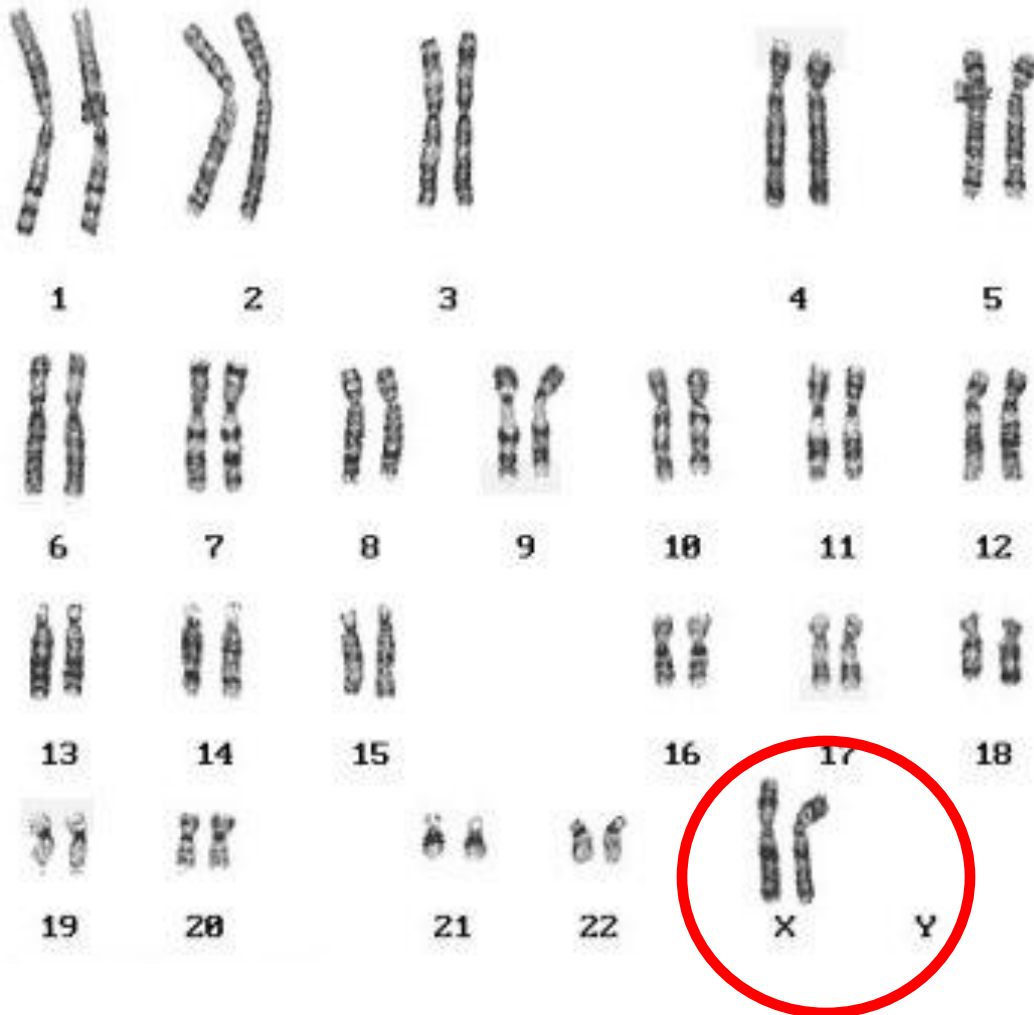


Normal male



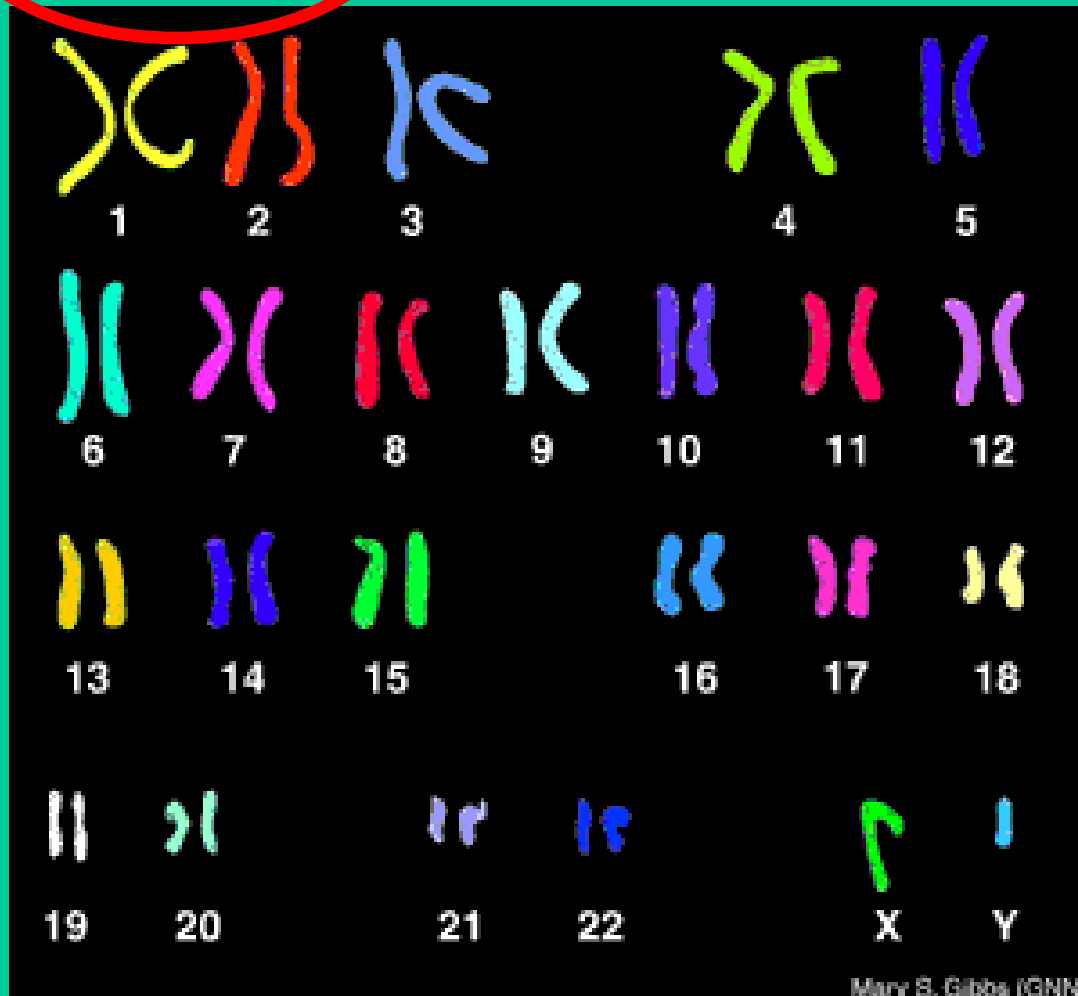
- Males have one X chromosome and one small Y chromosome

Normal female

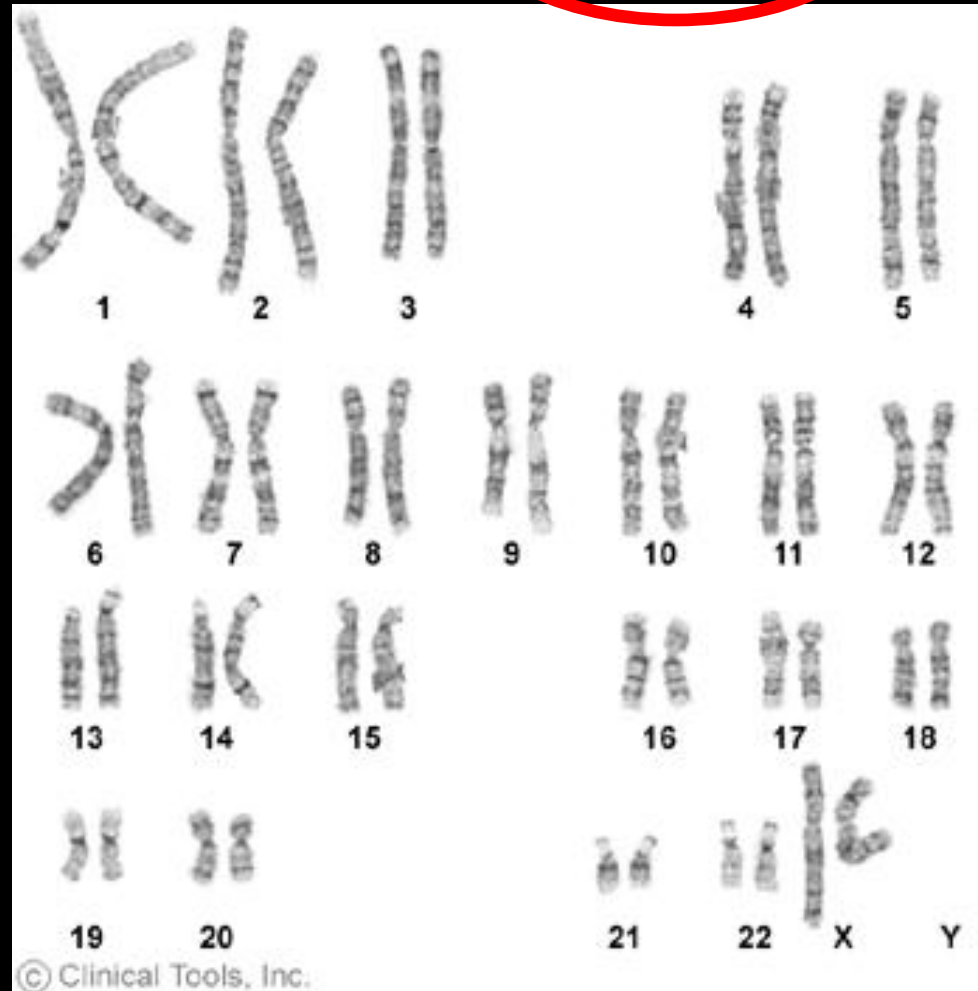


- Females have 2 copies of a large X chromosome

Male or female?



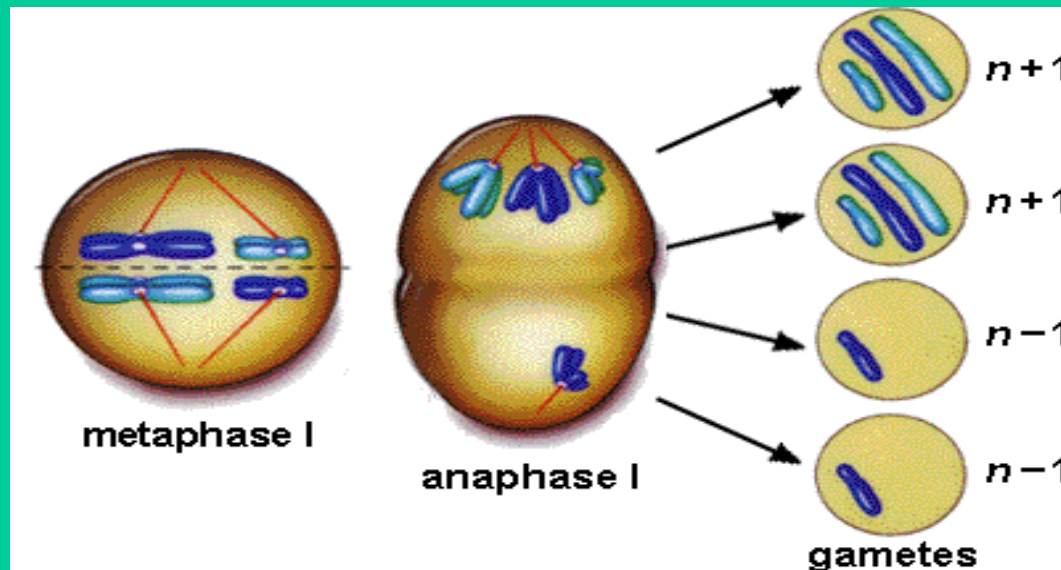
Male or female?

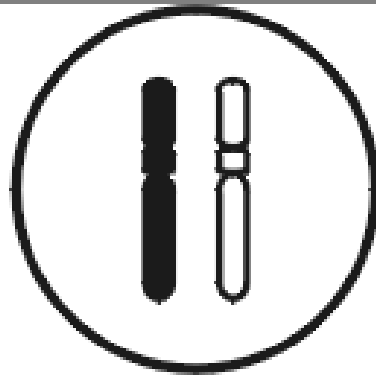


Chromosomal Disorders

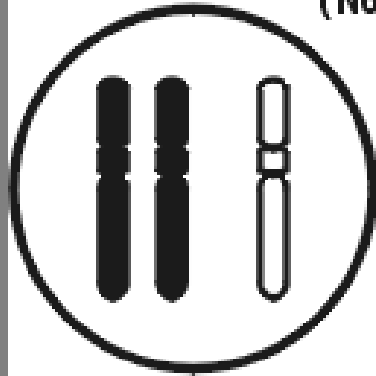
Nondisjunction

- Nondisjunction means “not coming apart”
- This results in abnormal numbers of chromosomes in gametes.

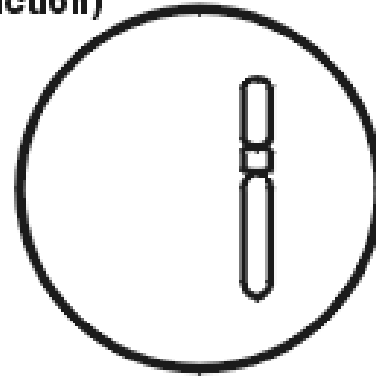




(Non-disjunction)



Trisomy



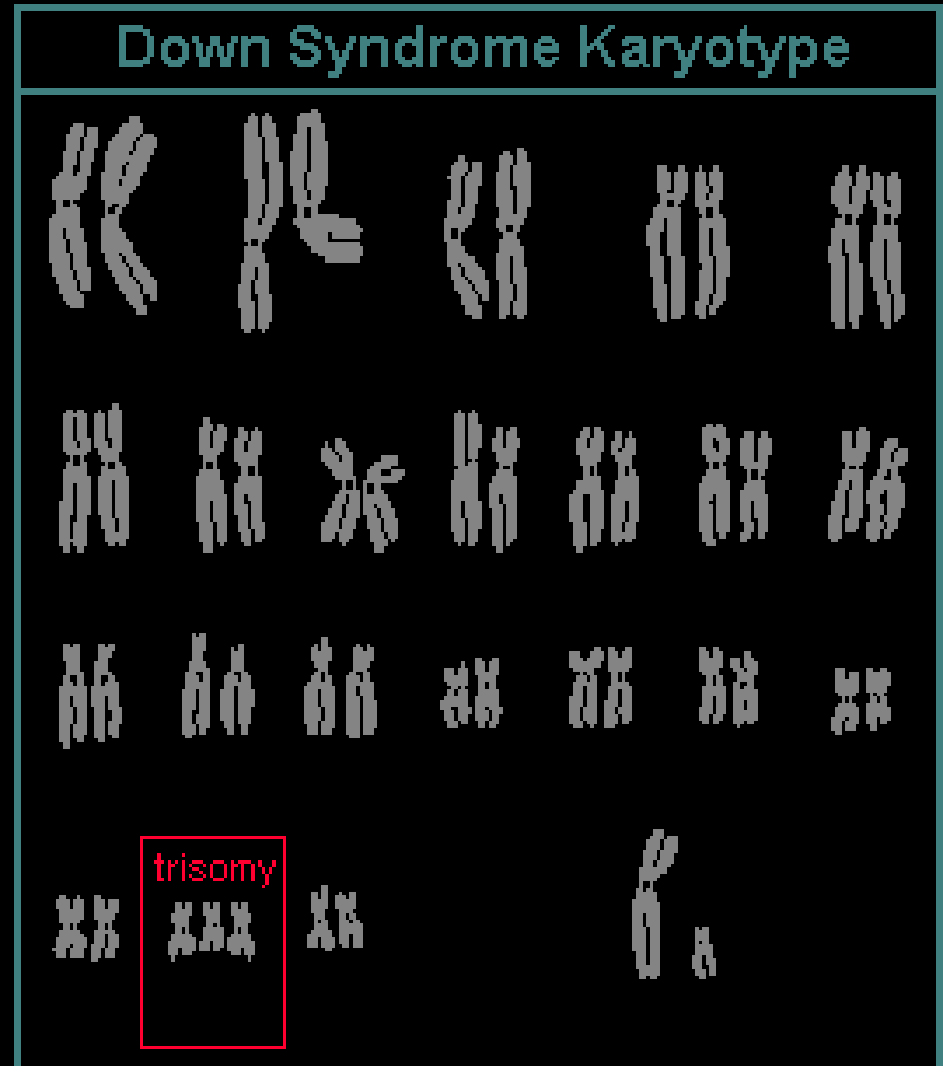
Monosomy

3 copies =
trisomy

1 copy =
monosomy

Down Syndrome

- Three copies of chromosome 21



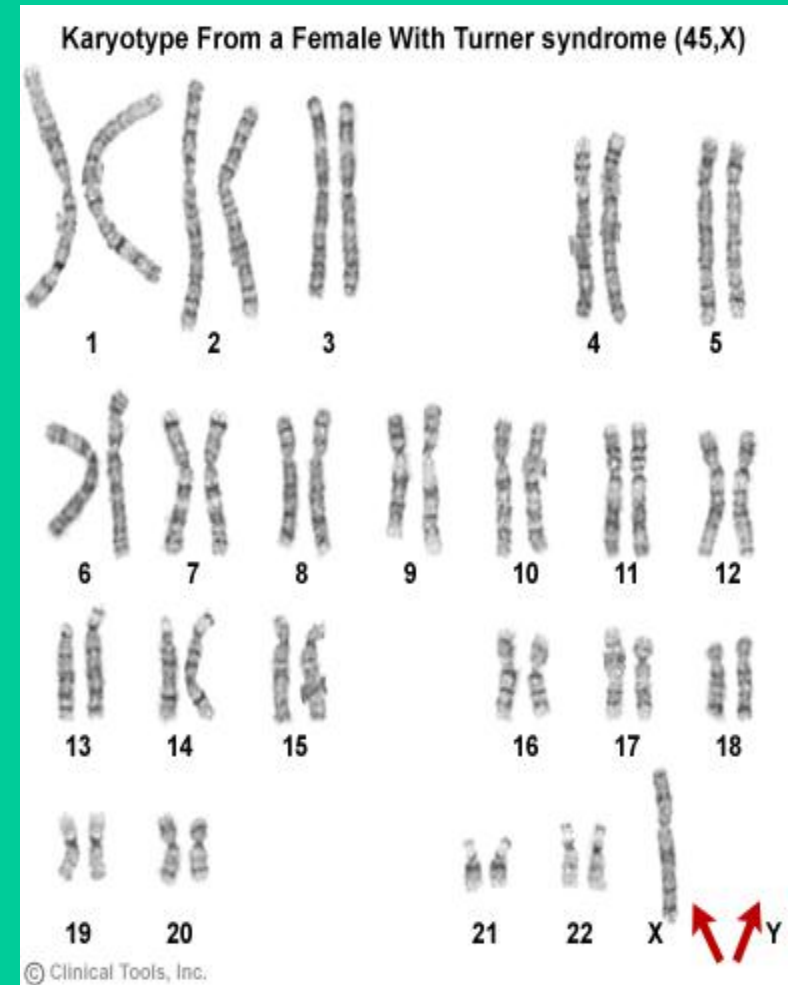
Sex Chromosome Disorders

- Turner's syndrome
- Klinefelter's syndrome

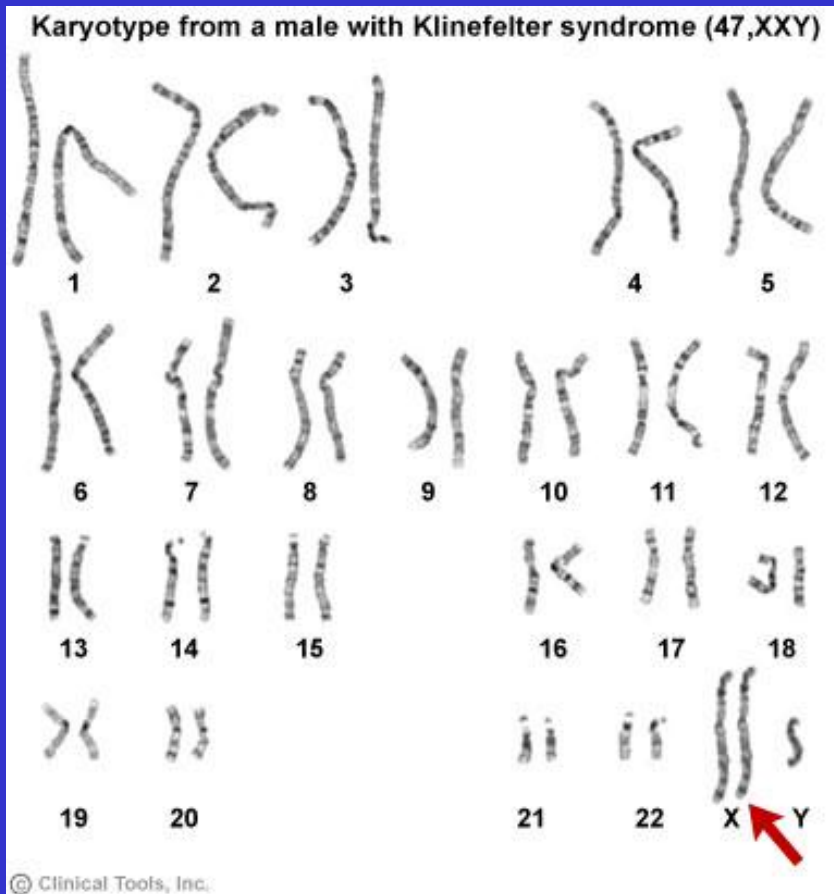
Turner's syndrome



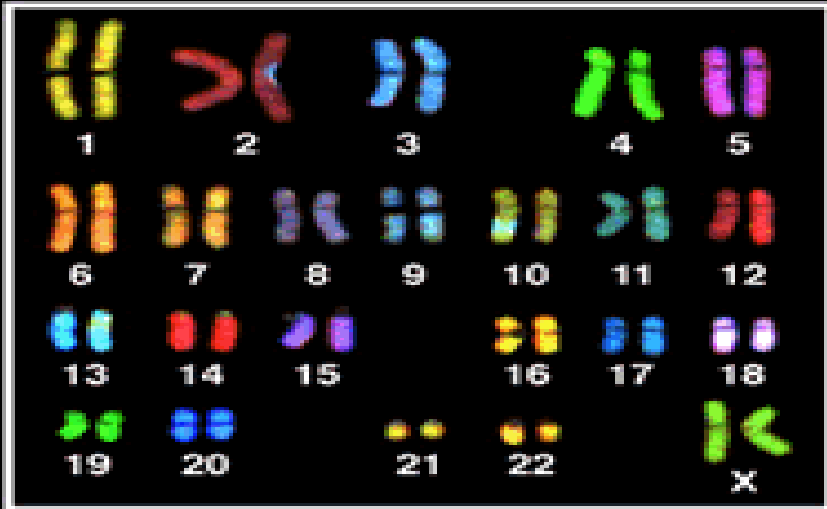
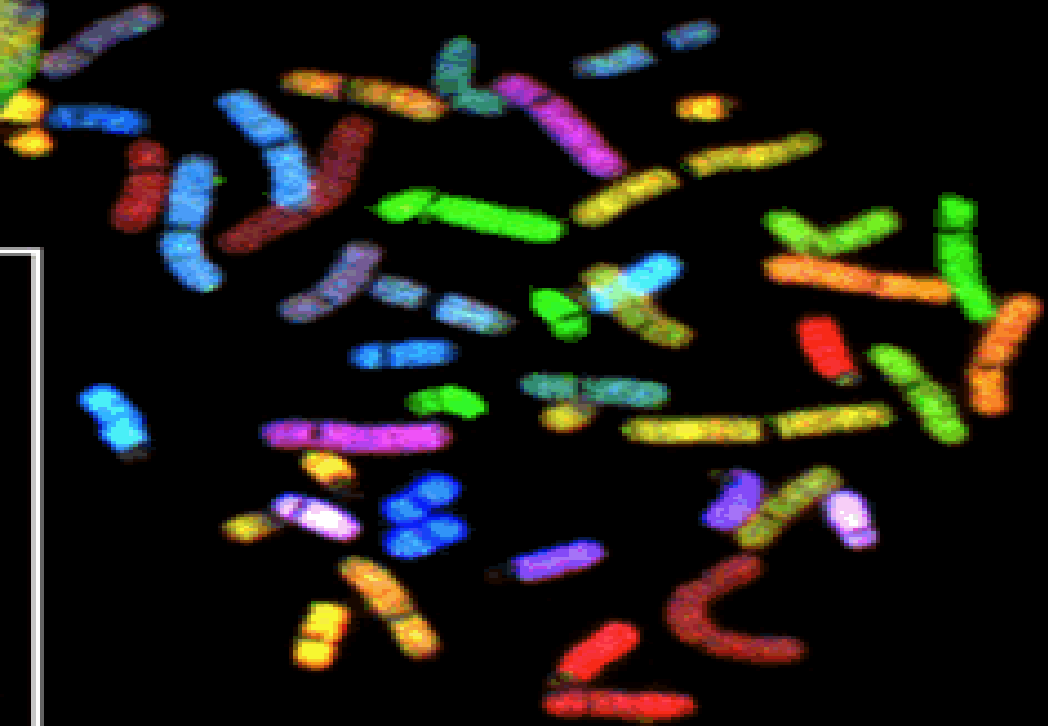
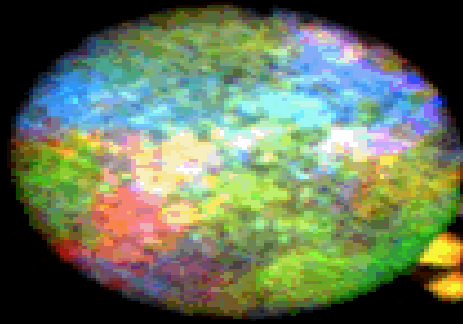
- Occurs in females
- Only inherit one x chromosome
- Sterile = unable to reproduce
- Broad chest



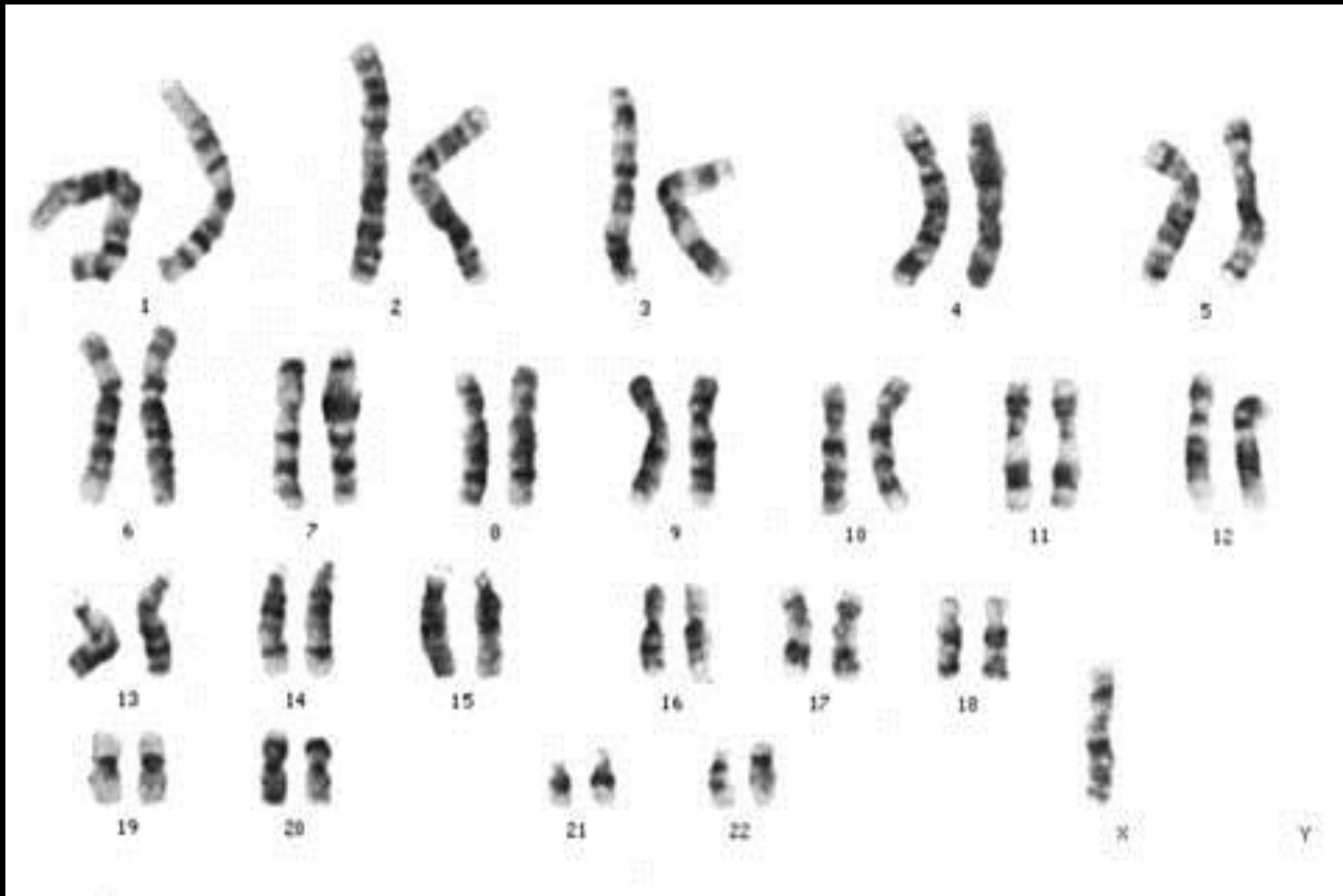
Klinefelter's syndrome



- Occurs in males
- Extra x chromosomes (XXY or XXXY)
- Infertile
- Low testosterone
- Increased breast tissue



Male or Female / Normal or Abnormal?



Male or Female / Normal or Abnormal?



Male or Female / Normal or Abnormal?



Male or Female / Normal or Abnormal?

Not all chromosomal mutations are harmful.

- Polyploidy (extra sets of chromosomes) can produce stronger and larger plants.
- Important crop plants are produced this way, including bananas!

