

## Human Chromosomes + Karyotypes

Genome - full set of genetic information that an organism carries in its DNA

Karyotype - organized set of homologous pairs of chromosomes in a diploid cell arranged in decreasing size  
last pair = sex chromosomes  
all the other = autosomes

Humans have 46 chromosomes or 23 pairs

46, XX (female) ♀ 46, XY (male) ♂

Sex linked gene = gene located on a sex chromosome

male only needs one recessive allele to express a sex linked trait carried on the X chromosome  
EX: hemophilia, color blindness

X-chromosome inactivation = Known as Barr body  
one X chromosome is inactivated + forms a condensed region

EX: calico cats  $X_B X_o$  (♀) (in ♂)  $X_B Y$  (black)  
B = black (calico)  $X_o Y$  (orange)  
O = orange

\* Calicos are almost always female.  
Male calicos are XXY - very rare.

## Pedigrees

Pedigrees are charts that show relationships within families.

- square = male    ○ = female circle
- ● = trait is expressed + is homozygous
- ◻ ◐ = heterozygous for the trait
- ○ = no trait expressed + homozygous