

Chromosomes

- 2 major groups of cells
1. somatic cell (body cells)
 - ex: blood cells
 - brain cells
 - skin cells
 - genetically identical
 - made during mitosis
 - 46 chromosomes (23 pairs)
 2. germ cell (gametes/sex cells)
 - ex: egg, sperm
 - genetically unique
 - made during meiosis
 - 23 chromosomes

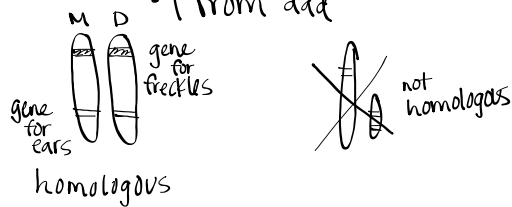
chromosomes

- 23 from mom
- 23 from dad

Homologous chromosome

2 chromosomes that are the same length & have regions that code for the same genes.

- 1 from mom
- 1 from dad



Types of chromosomes

1. autosomes (#1-22)
2. sex chromosome (23rd)
 - X or Y
 - XX: female
 - XY: male

Basic Genetics:

- Gregor Mendel "Father of Genetics"
- Traits: inherited characteristics
ex: hair color, height, eye shape
- CROSS: mating of 2 organisms
 - P generation: parental gen.
 - F₁ generation: offspring of P
 - F₂ generation: offspring of F₁

Conclusions

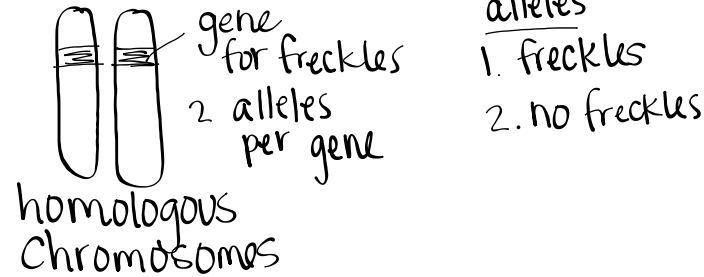
1. law of Segregation
 - organisms inherit 2 copies of each gene
 - 1 from mom
 - 1 from dad
 - pass 1 copy to our offspring
2. law of independent assortment

Genes & Alleles gene: piece of DNA that contains info to make a protein

- genotype: genetic makeup

- phenotype: physical appearance

allele: alternate forms of a gene



Types of alleles

1. Dominant (capital letters)
2. Recessive (lowercase letters)

- 2 copies of the same allele = homozygous.
- 2 different alleles = heterozygous

Examples

freckles are dominant

F = freckles

f = no freckles

Genotypes

Phenotype

F F (homozygous)
dominant

freckles

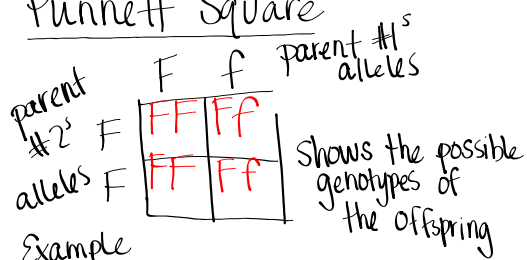
F f (heterozygous)
f F

freckles

f f (homozygous)
recessive

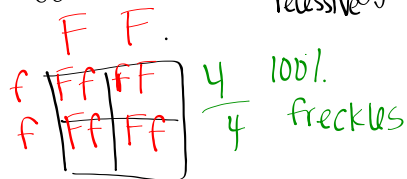
no freckles

Punnett Square

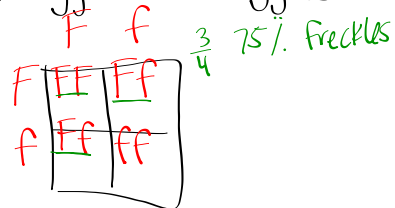


Example

1. homozygous dominant-homozygous recessive



2. heterozygous-heterozygous



Probability

$$\text{probability} = \frac{\text{\# of ways a specific event can occur}}{\text{\# of total possible outcomes}}$$

	male	female
phenotype	no freckles	freckles
genotype	ff	FF
gamete	f	F

	f	f	
F	Ff	Ff	4 4 freckles
F	Ff	Ff	