

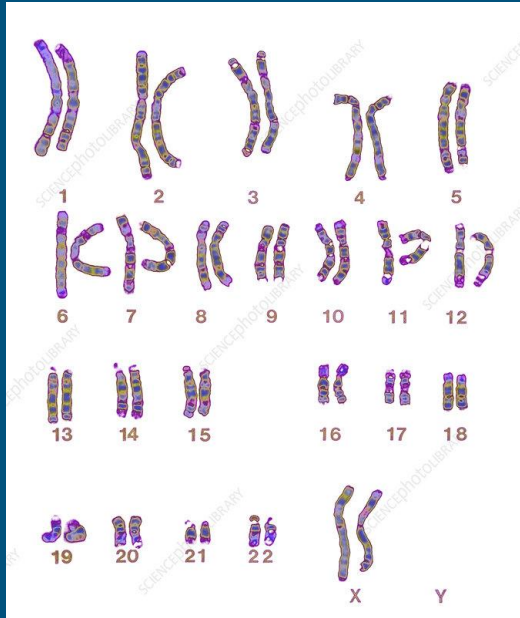
How is DNA passed down from generation to another?

6-7 PM Monday November 8th, 2021

Introduction

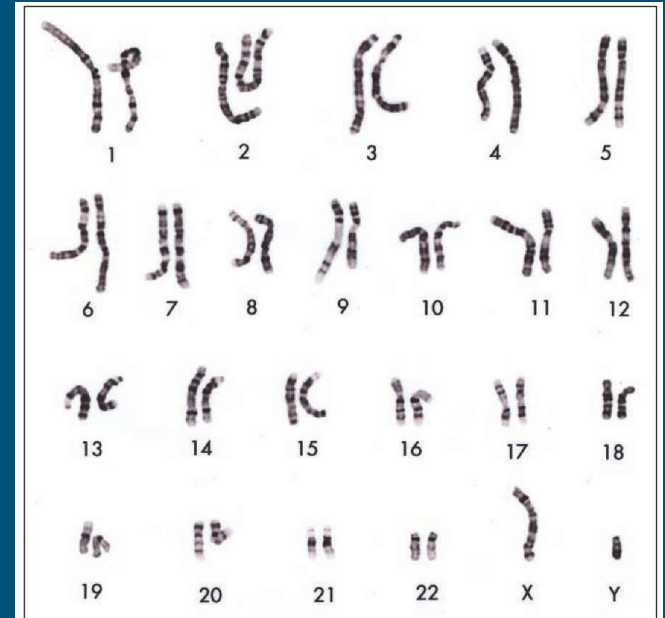
- Chromosomes
- Meiosis
 - Meiosis I
 - Meiosis II
- Alleles
 - Dominant vs. Recessive Alleles
- Types of Inheritance

Chromosomes



Female

- What are chromosomes
- Number of chromosomes
 - Autosomes-contain the instructions for somatic cells
 - Pairs 1-22 or the first 44 chromatids
 - Sex chromosomes- contain the instructions for reproductive cells
 - The X and Y chromosome
- Chromosomes are made up of nucleic acids and some proteins
- DNA is a polymer— the monomers of DNA are nucleotides

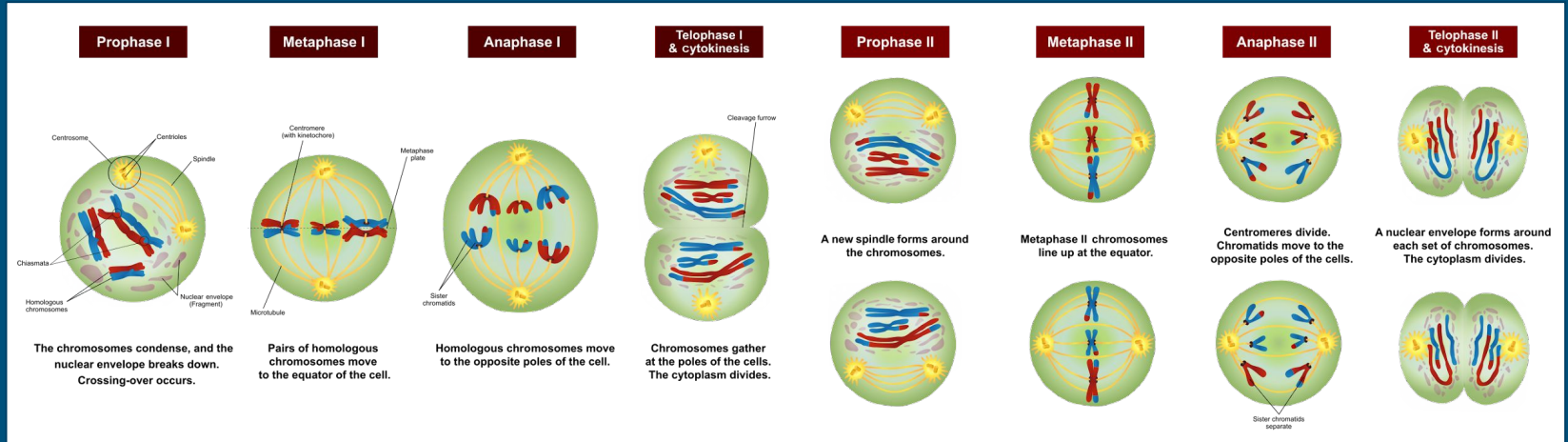


Male

Chromosomes

Half of the mother's and half of the fathers chromosomes come together to form the zygote–baby.

Meiosis Creates Gametes



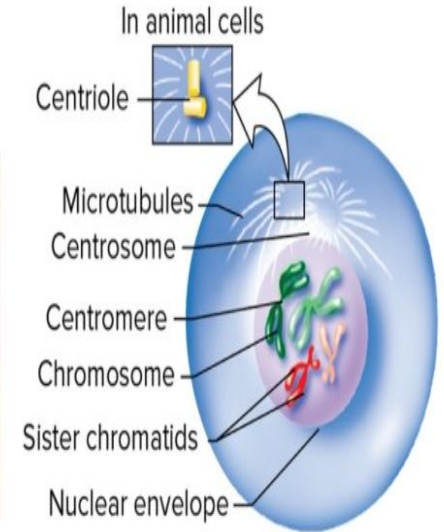
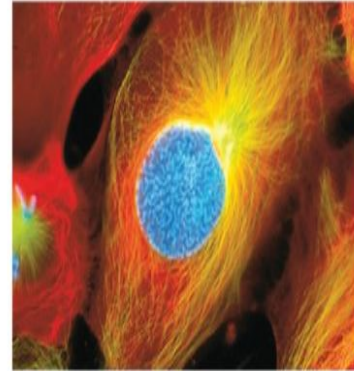
Gametes are needed to create zygotes

P M A T

Meiosis I - Step 1: Prophase I

Prophase I

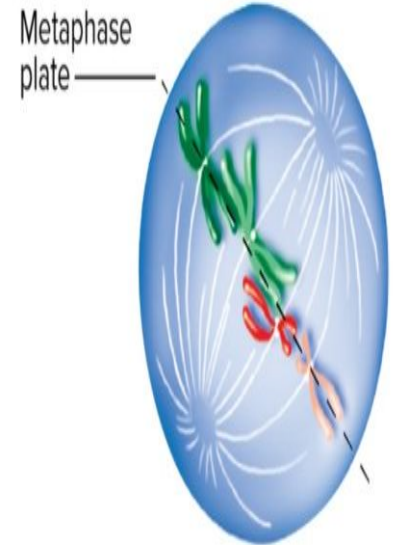
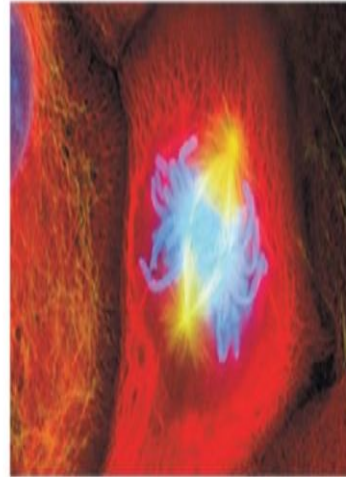
- Chromosomes condense and thicken.
- Synaptonemal complex forms
- Crossing over occurs
- Nuclear membrane dissolves.
- Spindle fibers form.



Meiosis I - Step 2: Metaphase I

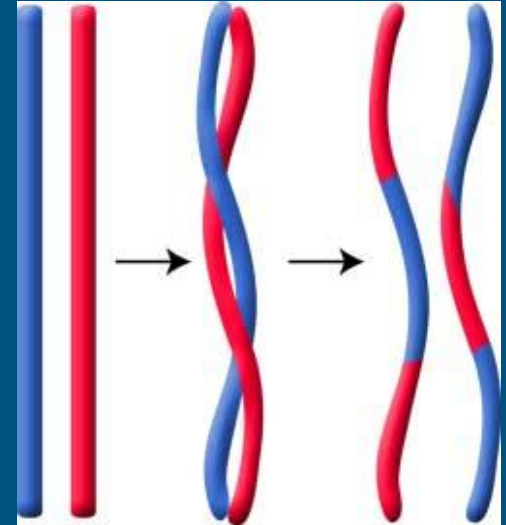
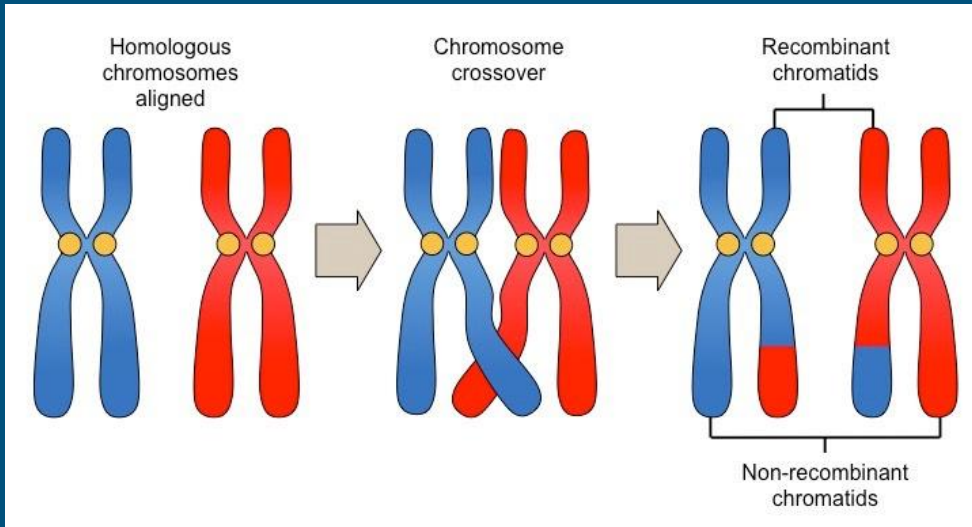
Metaphase

- Tetrads align on metaphase plate.
- Spindle fibers attach to chromosomes from opposite poles.
- Sister chromatids are pulled to same poles.

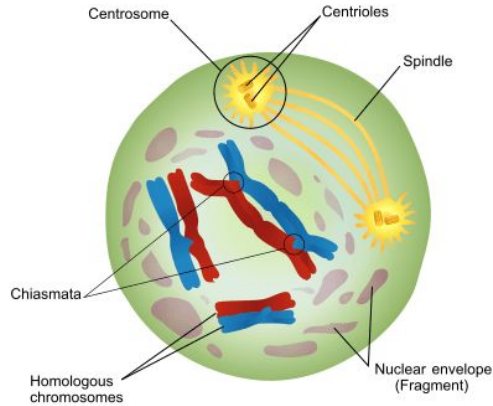


Prophase I

- Crossing over

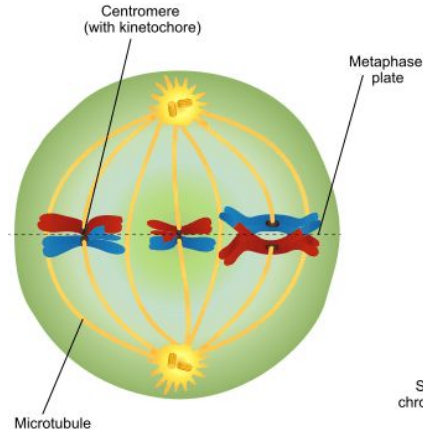


Prophase I



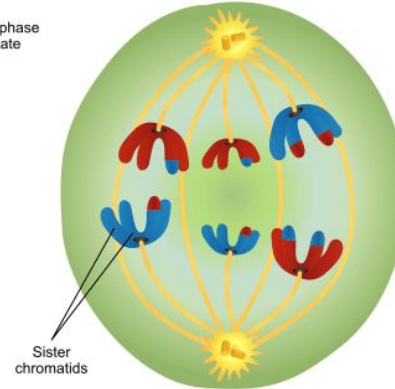
The chromosomes condense, and the nuclear envelope breaks down. Crossing-over occurs.

Metaphase I



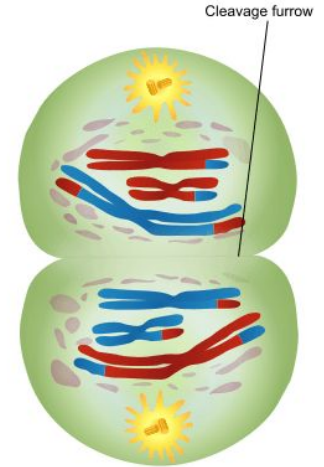
Pairs of homologous chromosomes move to the equator of the cell.

Anaphase I



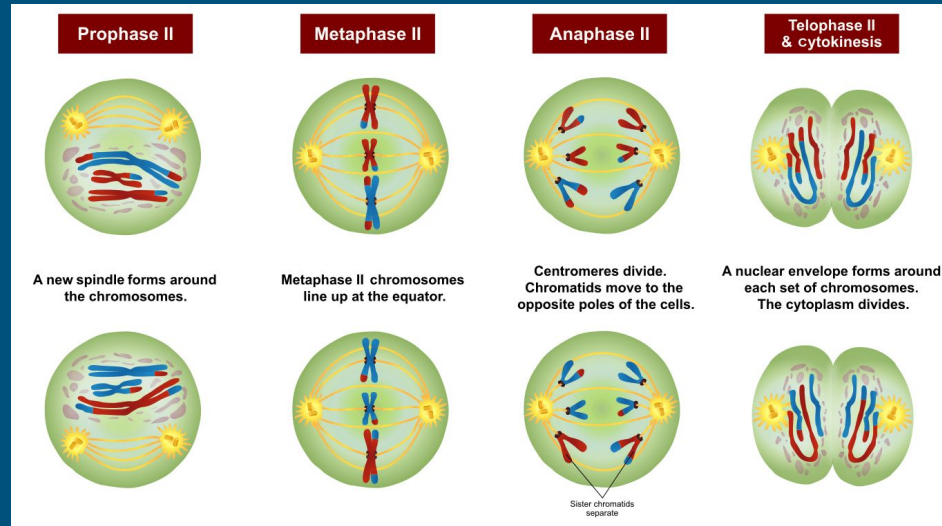
Homologous chromosomes move to the opposite poles of the cell.

Telophase I & cytokinesis



Chromosomes gather at the poles of the cells. The cytoplasm divides.

Meiosis II



Alleles

- Dominant and recessive alleles
- Punnett squares
 - Can be used to determine zygote (baby) phenotype.



Types of Inheritance

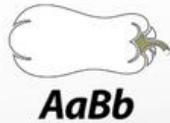
Epistasis (9:3:3:1)

Lethal Alleles

Redundancy

Dominant Epistasis

DOMINANT EPISTASIS



X



	AB	Ab	aB	ab
AB	AABB	AABb	AaBB	AaBb
Ab	AABb	AAbb	AaBb	Aabb
aB	AaBB	AaBb	aaBB	aaBb
ab	AaBb	Aabb	aaBb	aabb

12 White, Affected

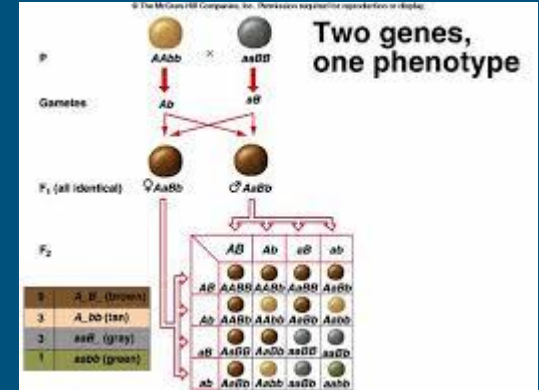


3 Yellow

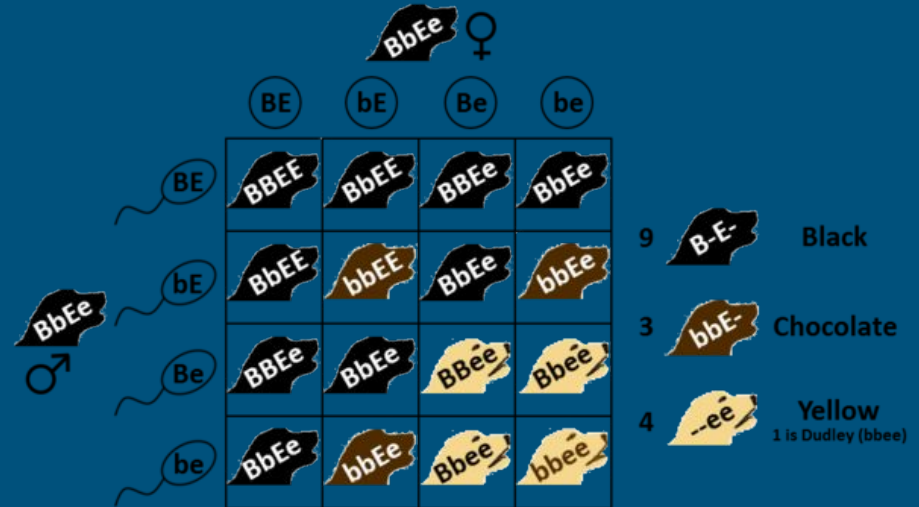


1 Green

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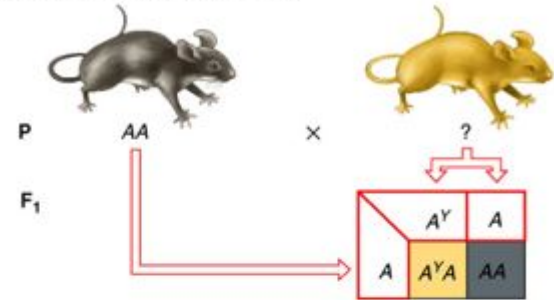
Recessive Epistasis



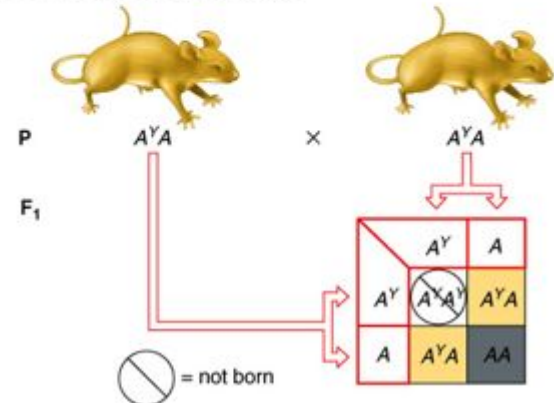
Lethal Alleles

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(a) All yellow mice are heterozygotes.



(b) Two copies of A^Y cause lethality.



Redundancy

Meiosis II - two people

Alleles - one person

Types of inheritance - two people

Conclusion - one person

Conclusion

- Chromosomes
- Meiosis
- Types of Inheritance

Definitions

Monomers make up polymers

Gametes

Zygote

Phenotype-

Genotype-

Picture Sources

[Female Chromosomes](#)

[Male Chromosomes](#)

[Stages of Meiosis](#)

[Lab Coat Chart](#)

[Crossing Over](#)

[Double Cross Over](#)

[Punnett Square](#)

[Dominant Epistasis I](#) (lentils)

[Dominant Epistasis II](#) (squash)

[Meiosis I](#)

[Prophase I and
Metaphase I](#)

[Meiosis II](#)