

Name \_\_\_\_\_ Date \_\_\_\_\_ Pd \_\_\_\_\_  
 Human Heredity

**Vocabulary Review**

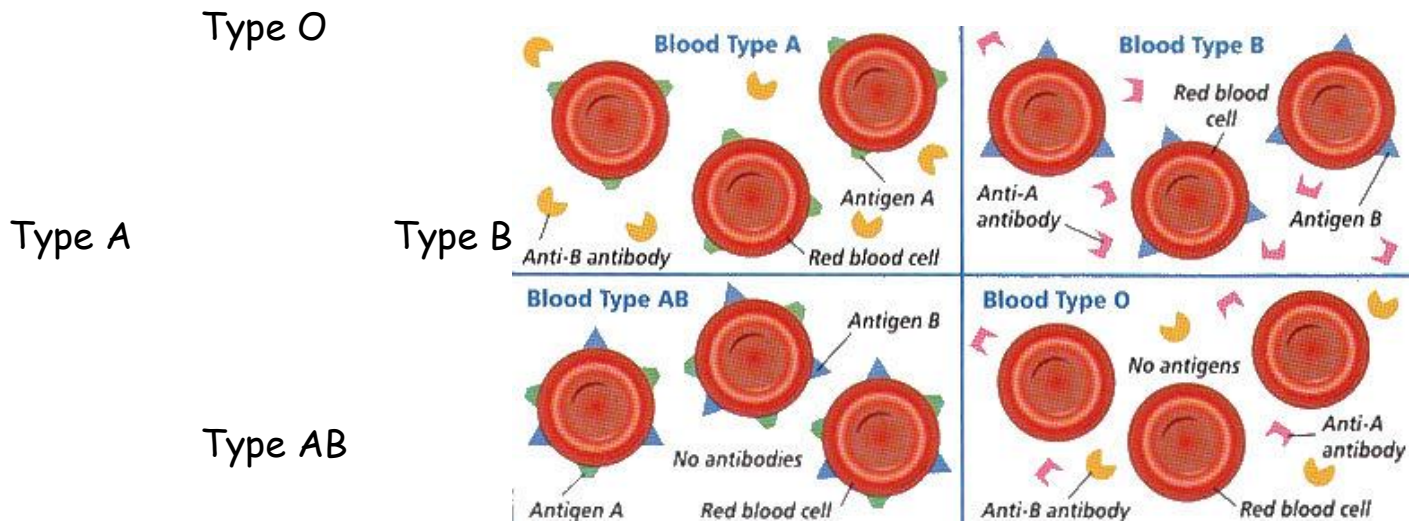
- Fertilization -
- Gametes -
- Autosomes -
- Sex chromosomes -
- Diploid cell -
- Haploid cell -
- Alleles -

**Multiple Alleles**

- A gene that has \_\_\_\_\_ alleles for a trait
- Only \_\_\_\_ are inherited by an individual

**Human blood groups**

	<u>Phenotype results</u>	<u>Genotype results</u>
AB -universal _____	Type A	_____
	Type B	_____
	Type AB	_____
O - universal _____	Type O	_____



## Autosomal Disorders in Humans

- Disorders caused by genes on chromosomes 1-22

### Huntington's disease

- Genetic disease of the \_\_\_\_\_ system; doesn't show until 30-40 yrs.
- Controlled by a \_\_\_\_\_ gene, 1 copy = death

### Sickle Cell Anemia

- Abnormal gene causes cells to be abnormally shaped
- Normal =  $H^A$ , Abnormal =  $H^S$
- People who are heterozygous ( $H^A H^S$ ) show codominance (both cell shapes)
- People who are \_\_\_\_\_ are partially resistance to malaria and are therefore more likely to survive and pass on their traits in some parts of the world.

### Polygenic Traits

Traits controlled by \_\_\_\_\_ genes

- Ex. Eye color, hair color, skin color

### Multifactorial

Traits affected by the \_\_\_\_\_

- Ex. Weight, height, IQ

Sex Chromosomes - \_\_\_\_ female, \_\_\_\_ male

What is the ratio of boys to girls in humans?

Who determines the sex of the child?

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## Sex-linked Genetic Disorders

Normal male -

Affected male -

Normal female -

Carrier female -

Affected female -

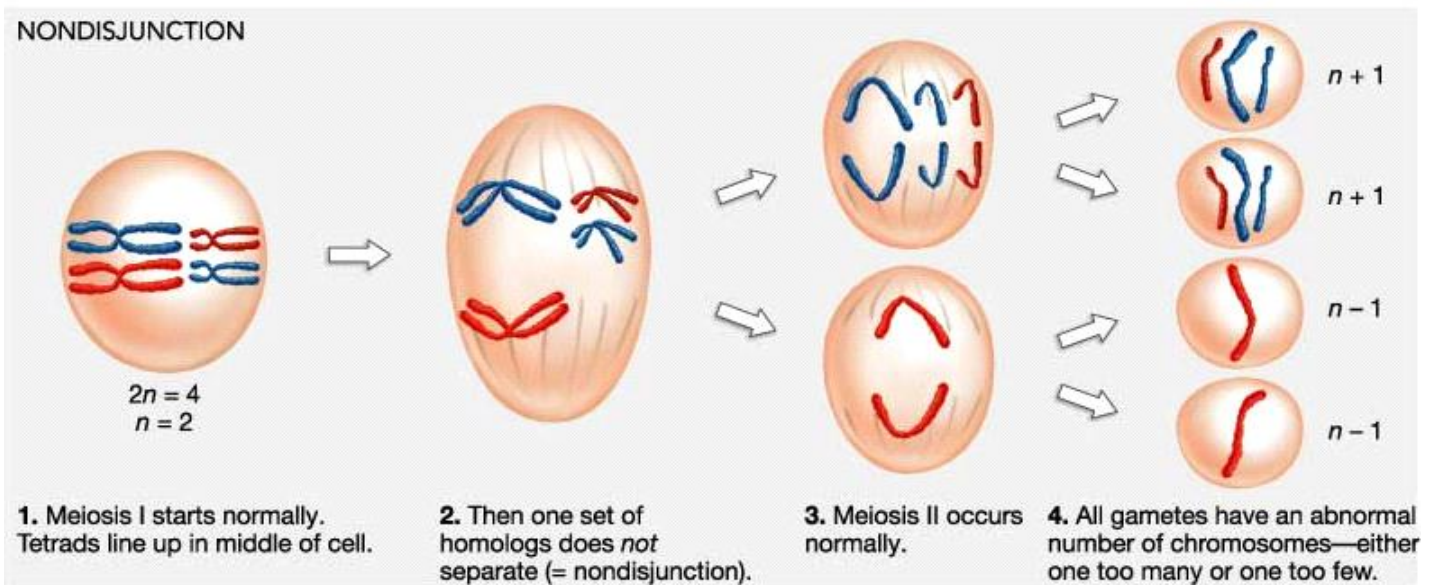
- Sex-linked traits - located on the \_\_\_ or \_\_\_ chromosomes
- Hemophilia - blood clotting protein is missing (X-linked recessive)
- Colorblindness - cannot determine between certain colors (X-linked recessive)

Are you color blind?

- What numbers do you see on the projector?

## Nondisjunction Disorders

Disorders caused by chromosomes not separating evenly during meiosis



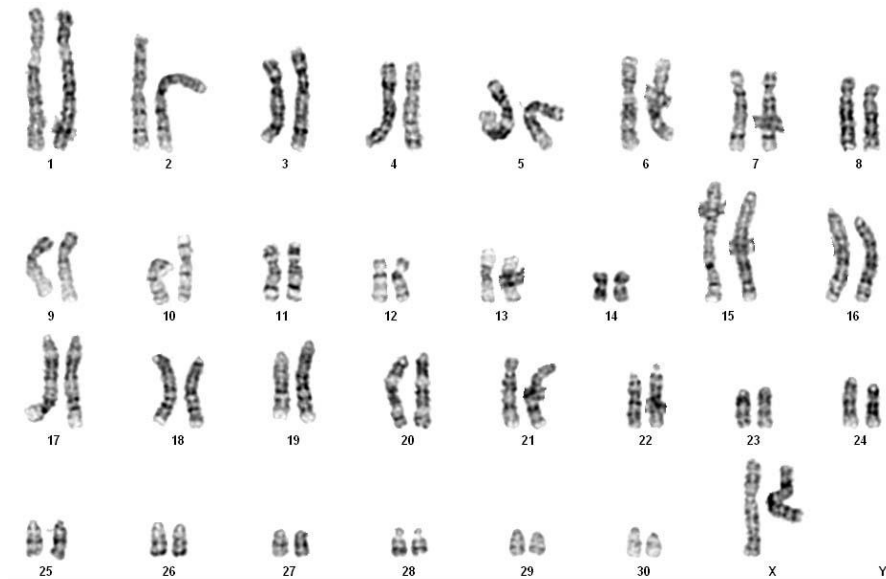
- Down Syndrome - extra chromosome # 21
- Edwards Syndrome - extra chromosome # 18
- Patau Syndrome - extra chromosome # 13

## Nondisjunction of sex chromosomes

- Turner Syndrome (XO female sterile)
- Klinefelter Syndrome (XXY male sterile)
- Super Alpha Male (XYY) Violent, aggressive, >75% of death row
- Trisomy X (female with 3 X chromosomes)
- X is necessary for survival
- The presence or absence of a Y chromosomes determines sex

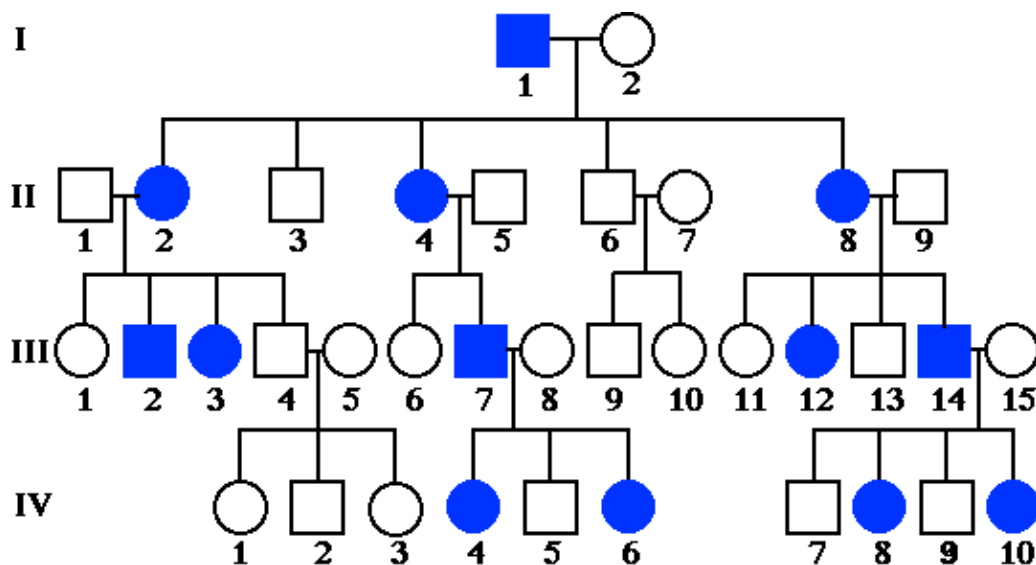
## Karyotype

- Picture of chromosomes arranged in pairs by size
- These are used to count chromosomes and look for disorders.



## Pedigree Chart

- Shows how a trait is inherited through several generations of a family



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## Human Heredity

### Notes Day 1

#### Vocabulary Review

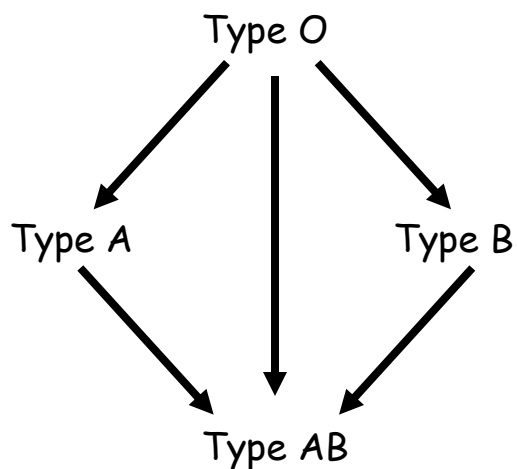
- Fertilization - egg and sperm join together
- Gametes - sex cells (sperm, egg)
- Autosomes - body cells
- Sex chromosomes - chromosomes X & Y
- Diploid cell - 46 chromosomes (23 pairs of chromosomes)
- Haploid cell - 23 chromosomes

#### Multiple Alleles

- A gene that has 3 or more alleles for a trait
- Only 2 are inherited by an individual

#### Human blood groups

- 3 alleles A, B, O
- 4 Blood Types - A, B, AB, O
  
- AB - universal acceptor
- O - universal donor



## Autosomal Disorders in Humans

- Disorders caused by genes on chromosomes 1-22

### Huntington's Disease

- Genetic disease of the nervous system; doesn't show until 30-40 yrs.
- Controlled by a dominant gene, 1 copy = death

### Sickle Cell Anemia

- Abnormal gene causes cells to be abnormally shaped
- Normal =  $H^A$ , Abnormal =  $H^S$
- People who are heterozygous ( $H^A H^S$ ) show codominance (both cell shapes)
- People who are heterozygous are partially resistance to malaria and are therefore more likely to survive and pass on their traits in some parts of the world.

### Polygenic Traits

- Traits controlled by 2 or more genes
- Ex. Eye color, hair color, skin color

Sex Chromosomes - XX- female, XY male

What is the ratio of boys to girls in humans?

50:50

Who determines the sex of the child? - DAD

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## Sex-linked Genetic Disorders

- Sex-linked traits - located on the X or Y chromosomes
- Hemophilia - blood clotting protein is missing (X-linked recessive)
- Colorblindness - cannot determine between certain colors (X-linked recessive)

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## Human Heredity

### Notes Day 3

#### Nondisjunction Disorders

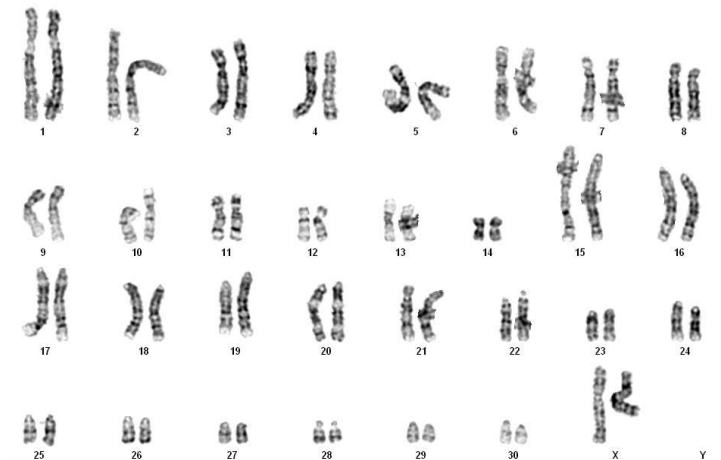
- Disorders caused by chromosomes not separating evenly during meiosis
  - Down Syndrome - extra chromosome # 21

#### Nondisjunction of sex chromosomes

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- X is necessary for survival
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