

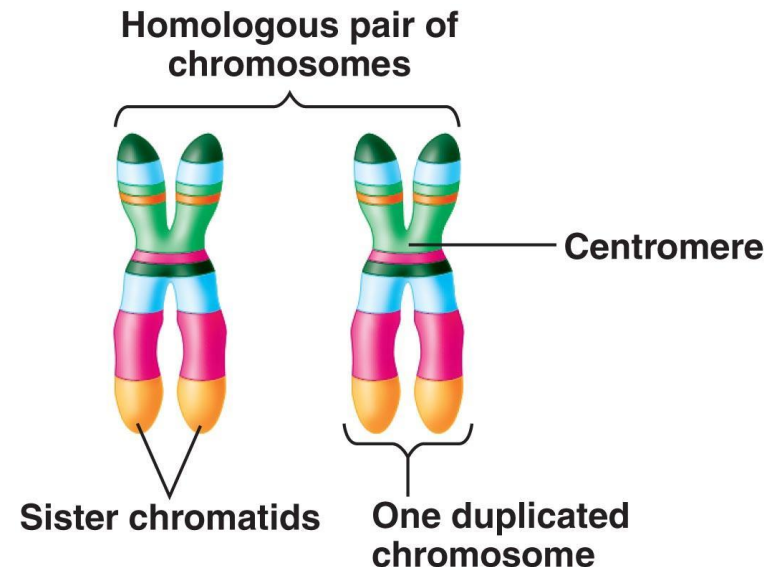
CHROMOSOMES IN HUMAN CELLS



How Many Chromosomes in a Cell?

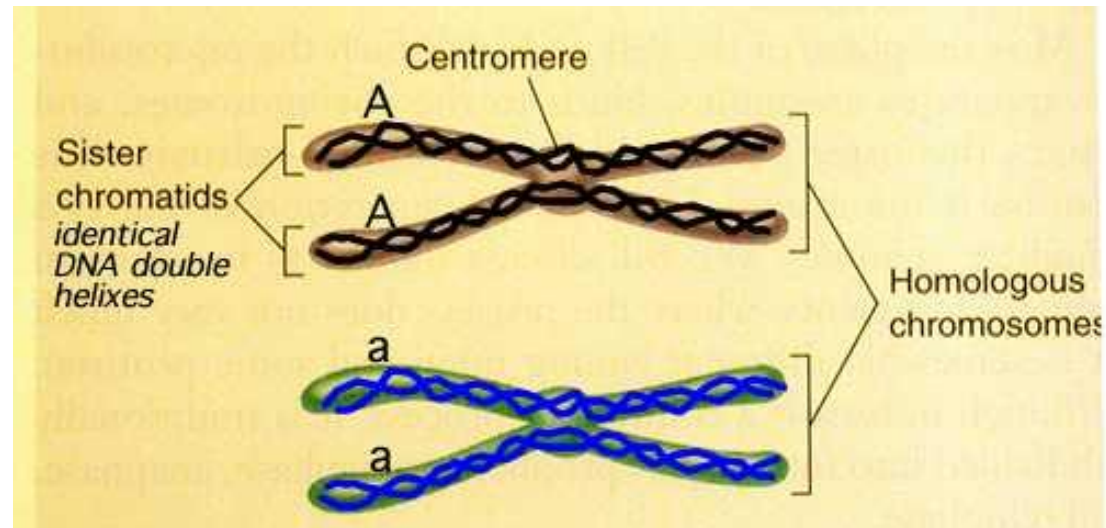
- Well, it depends...
- **Homologous chromosomes** are 2 chromosomes that code for the same traits.

Typically you get one of the chromosomes from your mom and one from your dad.



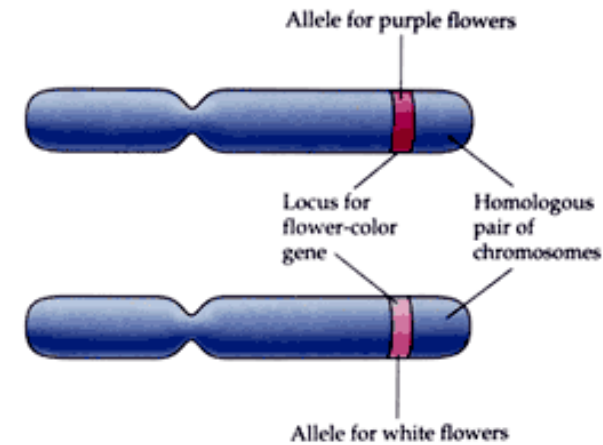
Homologous Chromosomes

- Homo- in Latin means: “The Same”
- The chromosomes are **NOT identical** however (your mom and dad aren’t identical are they?).
- What is similar about them, **is they code for the same traits/genes**. But the versions of the genes may not be the same.

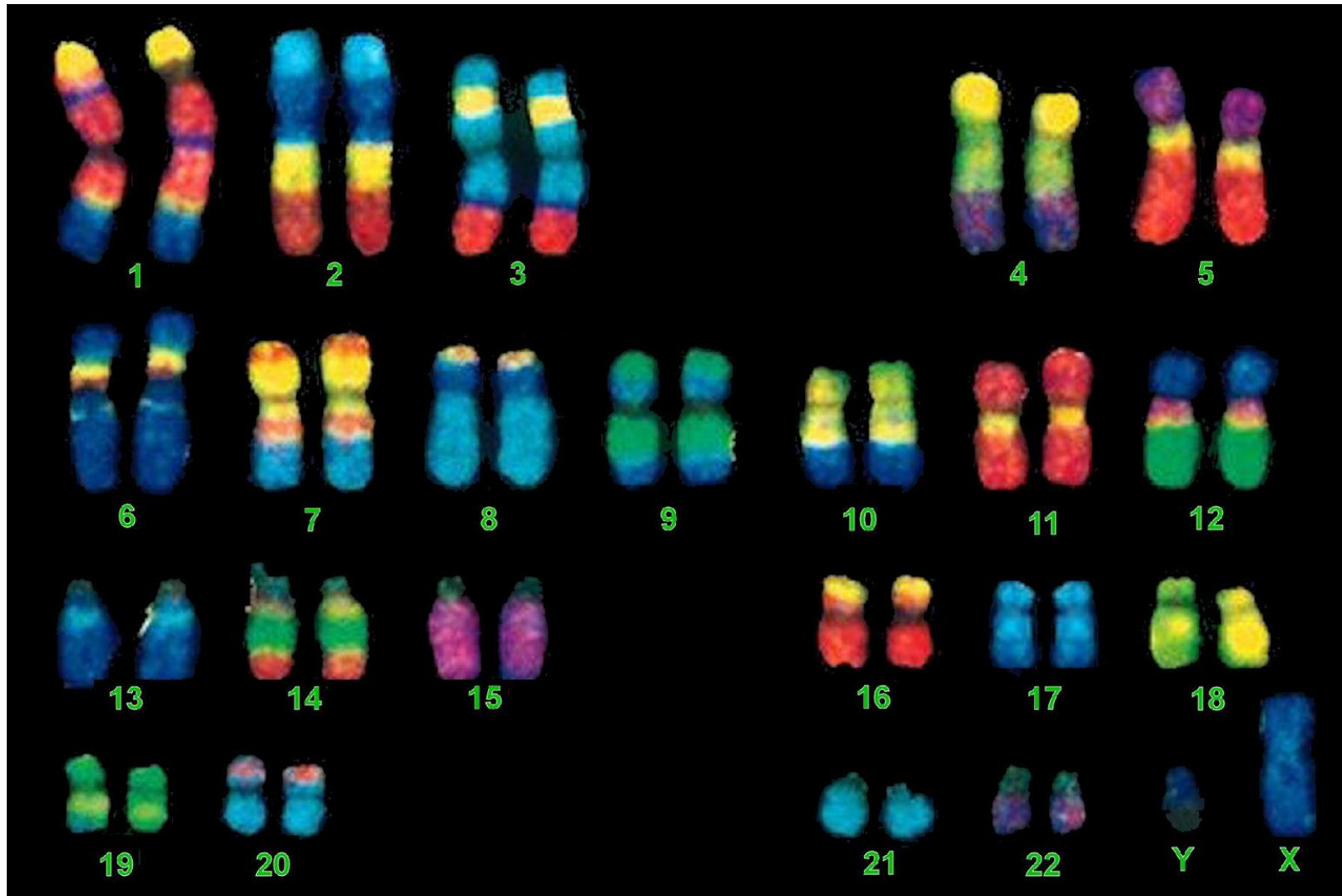


Homologous Chromosomes

- For example- if the gene for flower color is on chromosome #3 for a certain flower, all chromosome #3's for this species of flower would be homologous (they all code for the same gene).
- But the homologous chromosomes may not have the same version of this gene.
- One could have a gene for purple flowers and the other for white flowers.



In Humans, we see: 23 different types
of chromosomes



In Humans (& most animals) there are two options:

- A cell can have **two** copies of each chromosome: Body Cell

or

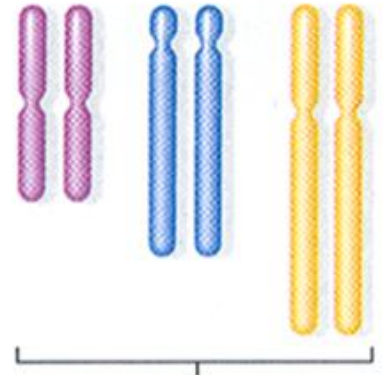
- A cell can have **one** copy of each chromosome: Sex Cell

One copy of genetic material subdivided into chromosomes



Three nonhomologous chromosomes

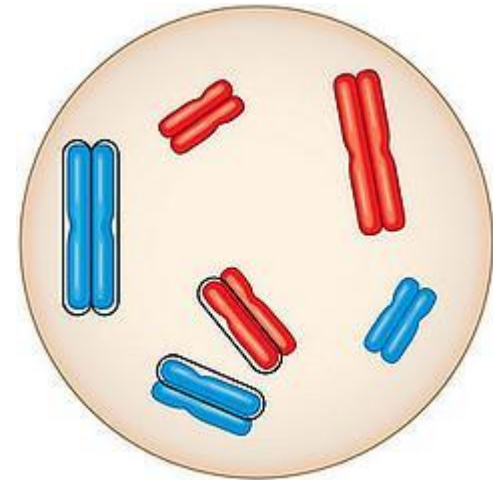
Two copies of genetic material subdivided into chromosomes



Three pairs of homologous chromosomes

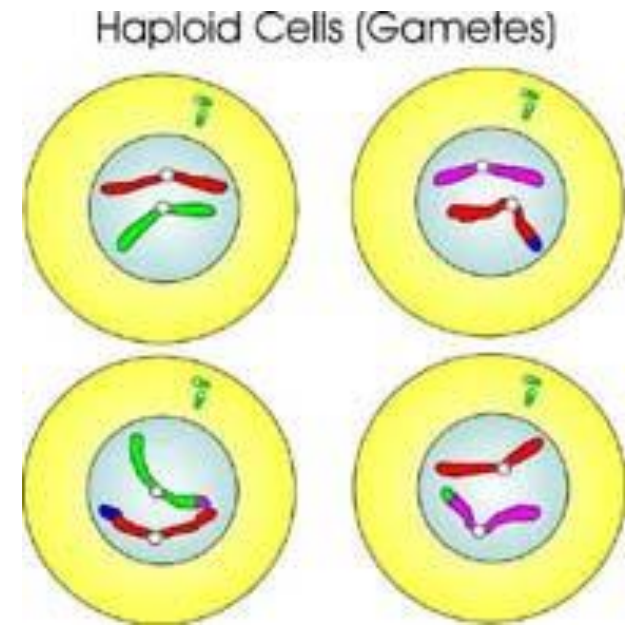
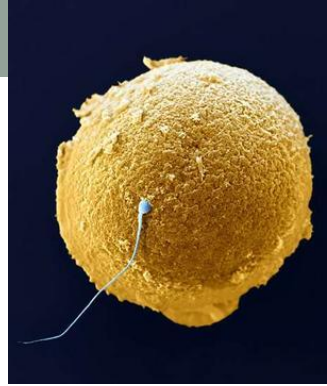
Body Cells: Every cell in the body except sperm and egg cells.

- Humans have **23 pairs** of homologous chromosomes.
(One from mom and one from dad)
- This is called **diploid** or **2N**
 - *N stands for the number of unique chromosomes*
- These body cells are called “**somatic cells**”
 - That means human somatic cells have **46** total chromosomes.



Sex Cells: Sperm or Egg

- Humans have **1 of each** chromosome in sex cells.
- Sex cells are involved in sex.
- That means humans have **23 total** chromosomes in sperm or egg.
- This is **half** the amount as a body cell- so these cells are referred to as **haploid** or **N**.
- These cells are called **gametes**.



Remember N refers to how many unique chromosomes are in the cell. So in this case, there would be only 1 of each chromosome.

Many names for one thing

Body Cells = Somatic Cells = $2N$ = Diploid

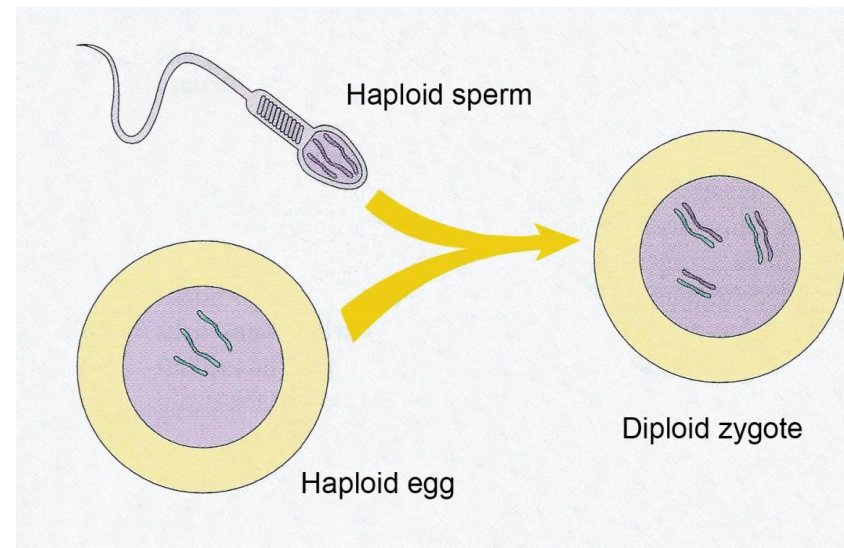
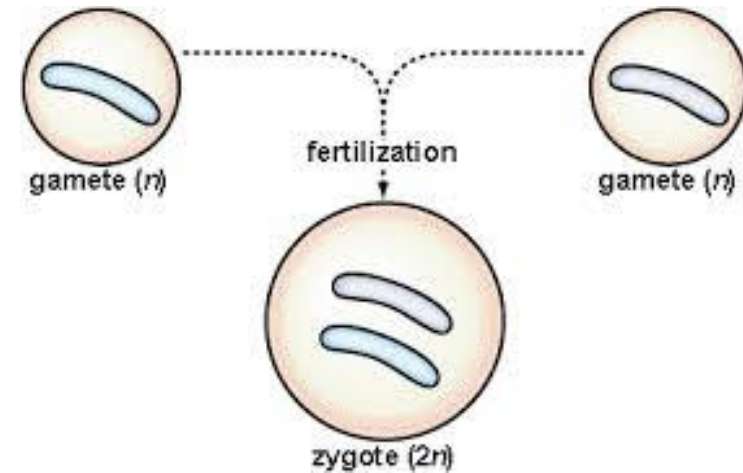
Sex Cells = Gametes = N = Haploid

*You need to know what terms go with what terms
(for example, you should be able to tell me the 3
other names for a body cell)*

Haploid vs. Diploid

Why do you think gamete cells need to be haploid?

FYI: A zygote is a fertilized egg.



Watch This to Review

