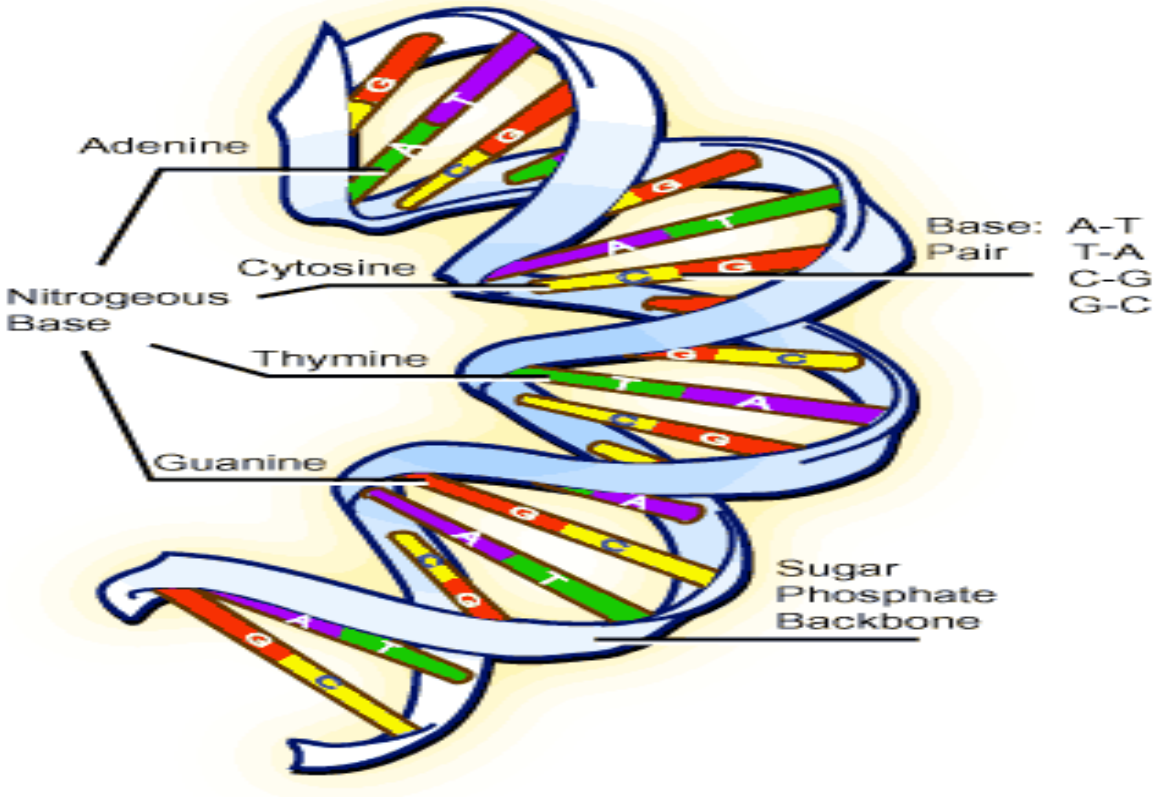
DNA and GENETICS UNIT NOTES

NAME:_____

DO NOT LOSE!

DNA

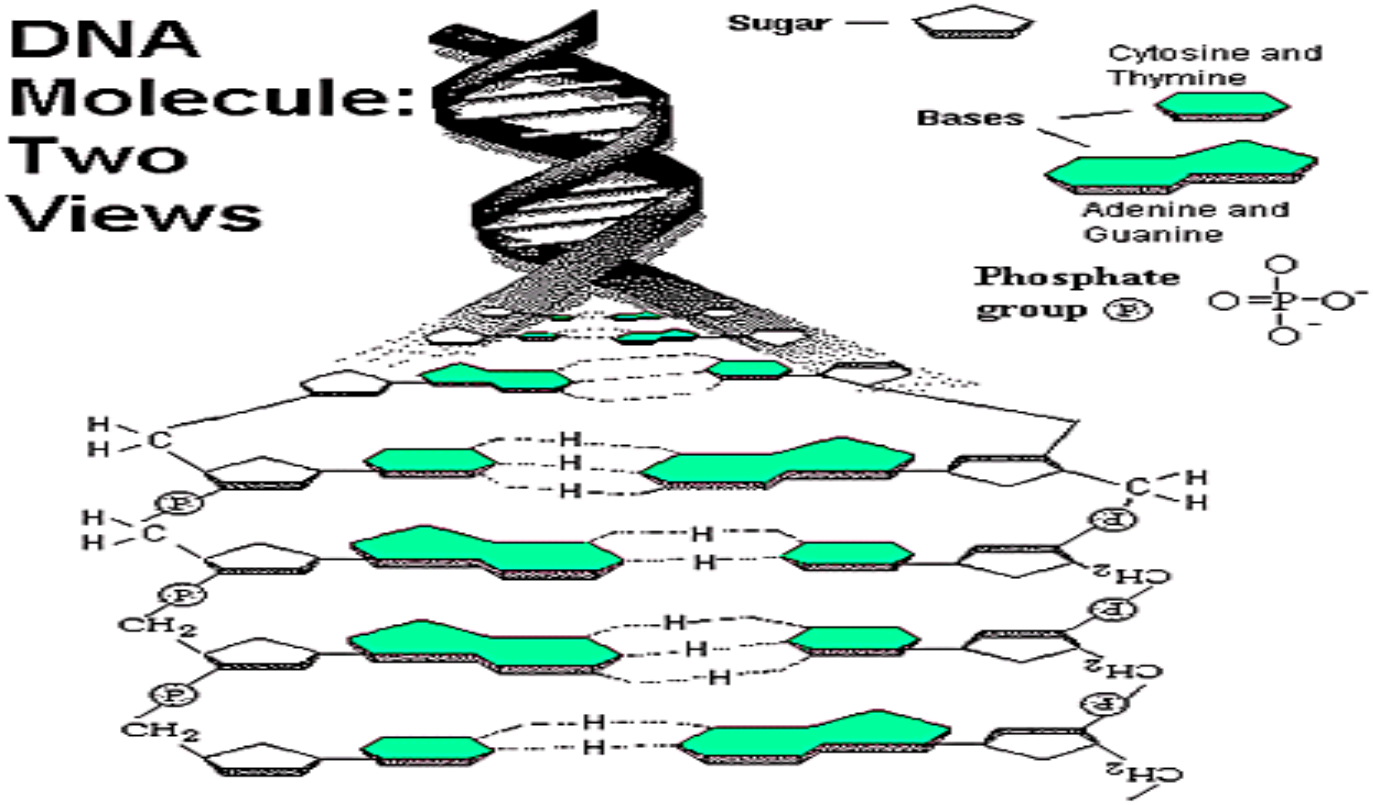
- __ __ __ - Deoxyribose Nucleic Acid
- Shape is called double _____
- DNA has the information for our cells to make _____.
- DNA through transcription makes m_____
- mRNA through translation makes _____(ribosomes)



- Watson and Crick (_____) Discovered structure of DNA.
- Rosalind _____? Who is she?

- Watson and Crick used her _____ to create the double helix but never gave her credit. She died just before they won the Nobel Prize.

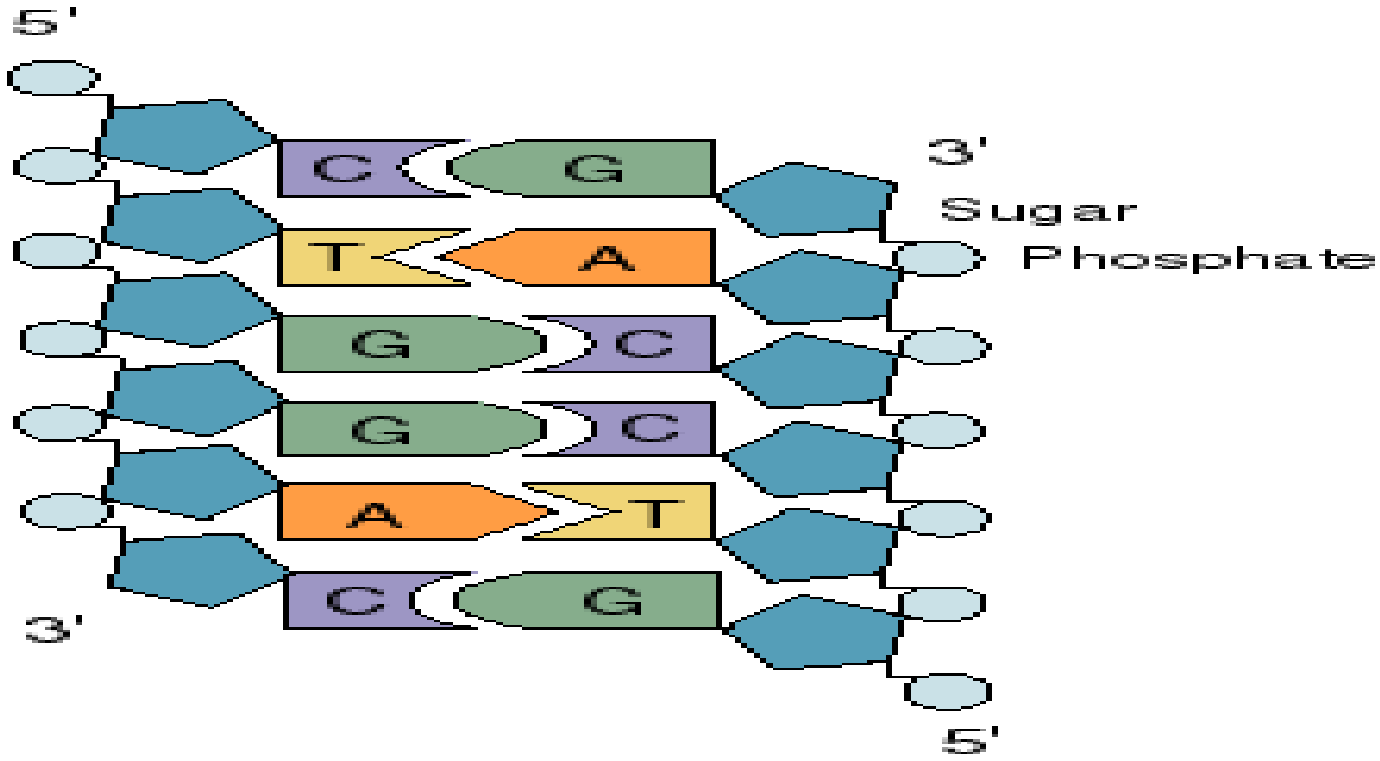
- Each unit of DNA called a _____ of DNA consists of 3 parts.
  - Phosphate _____
  - A ____-carbon sugar (deoxyribose)
  - A _____ base attached to the sugar



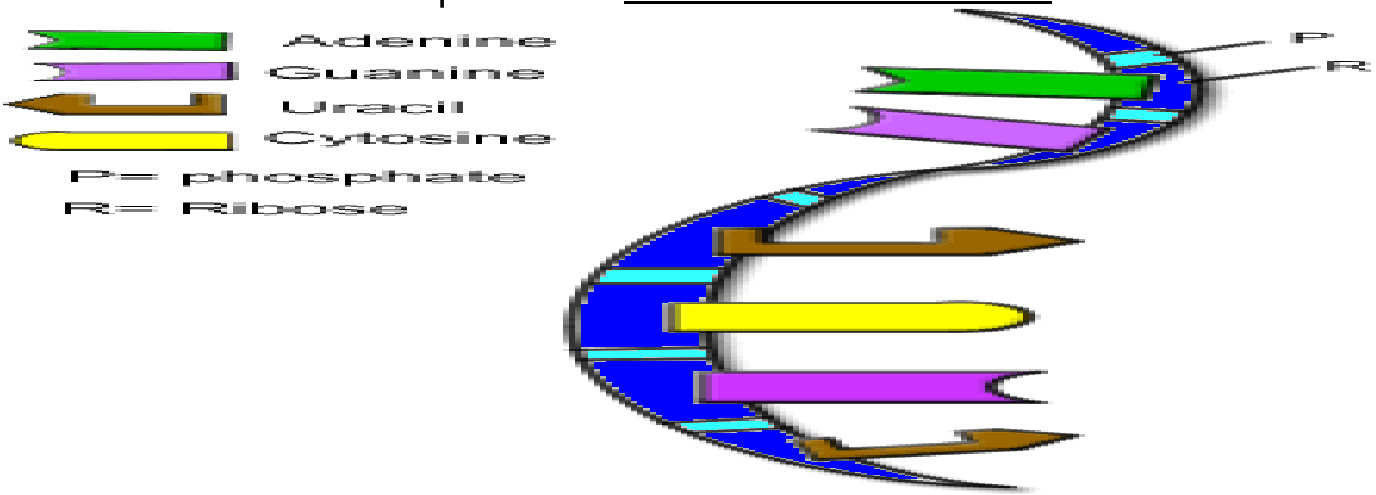
- There are _____ different types of nucleotides found in DNA
  - A is for _____
  - G is for _____
  - C is for _____
  - T is for _____

- A goes with T
- C goes with G

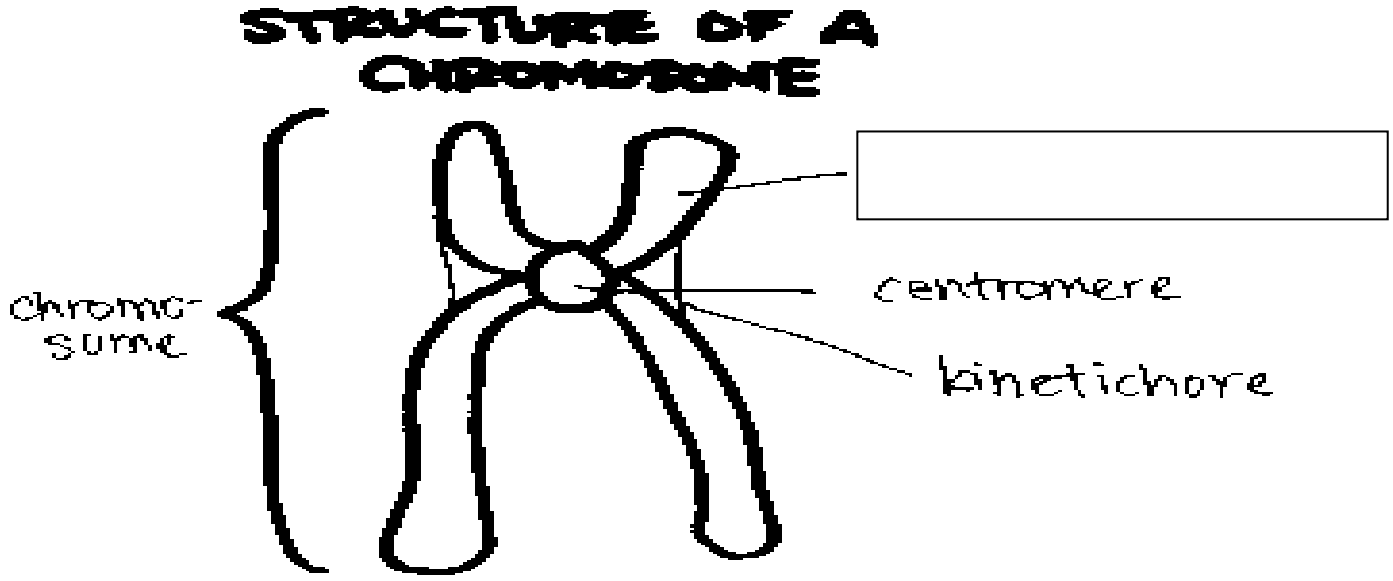
- WRONG! T – C or G - A



- RNA
  - - _____strand
  - - Uracil replaces _____



NEW AREA OF FOCUS: CELL DIVISION

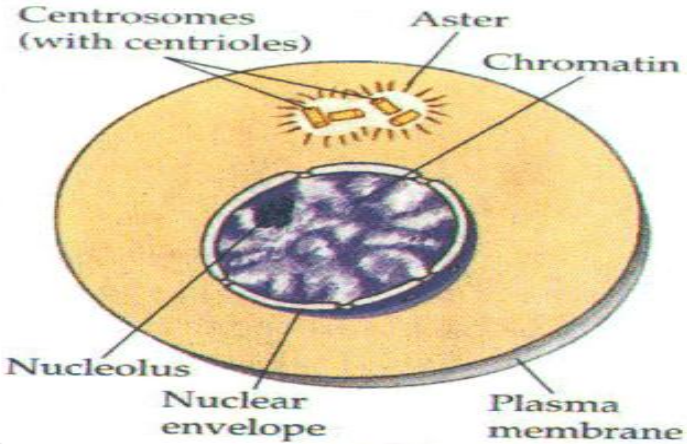


Mitosis – Cellular _____

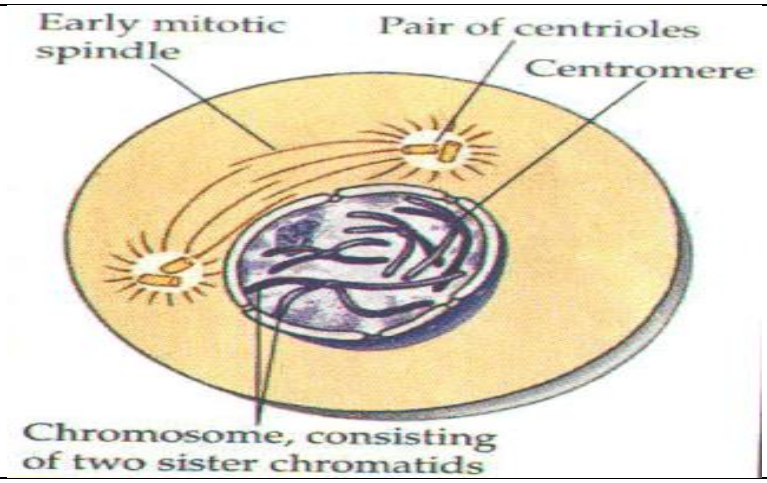
- When one cell divides into _____
- Exact copy of the cells _____ material is made.

Interphase

- Most of cell cycle (____%)
- Cell _____and develops (gets bigger)
- Chr_____ not visible
- Nucleus intact
- DNA is _____

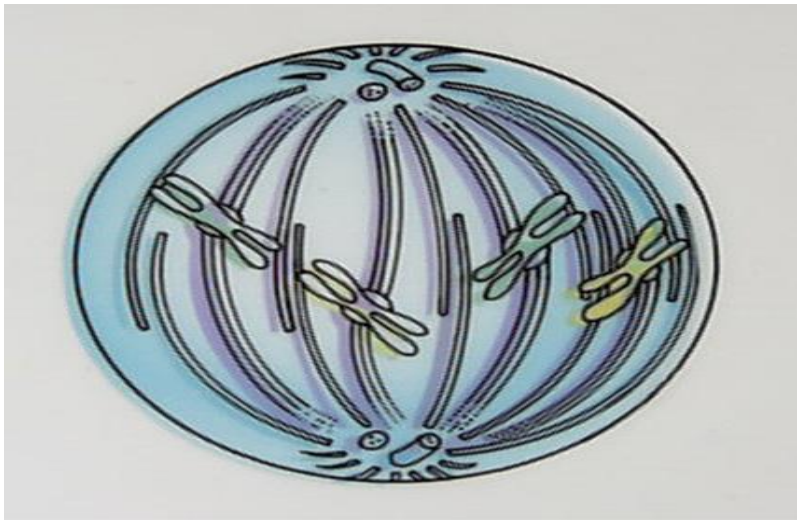


- Prophase
  - Chromatin draws together to create _____.
  - Spindle fibers form.

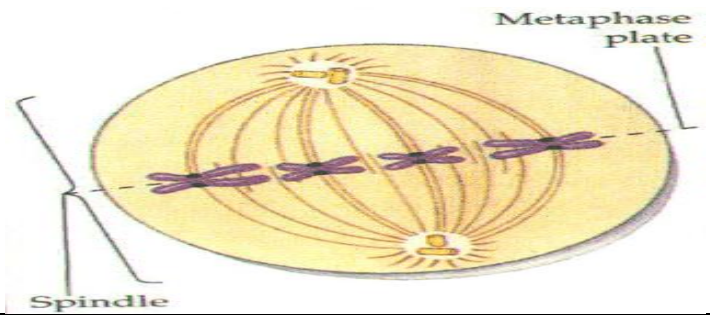


Prometaphase

- Prometaphase
  - Nuclear envelope _____down.
  - Centrosomes are positioned at _____ poles of the cell.
  - Spindle fibers attach to chromosome at the kinetochore.

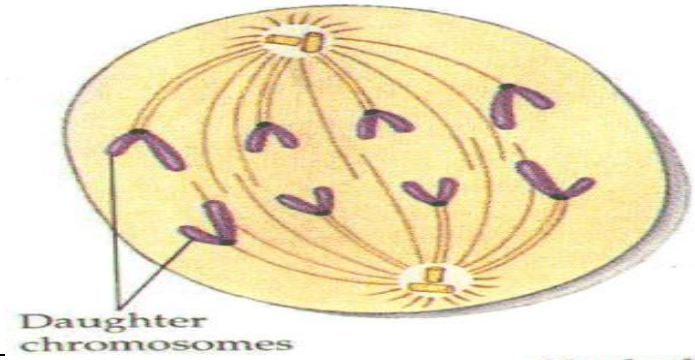


Metaphase - Chromosomes line up on _____



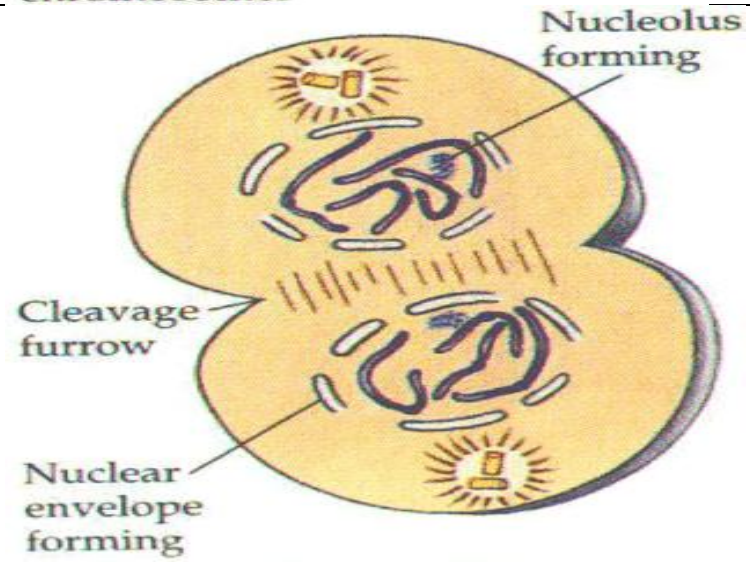
Anaphase

- Chromosomes get split at _____
- The two identical copies get pulled _____

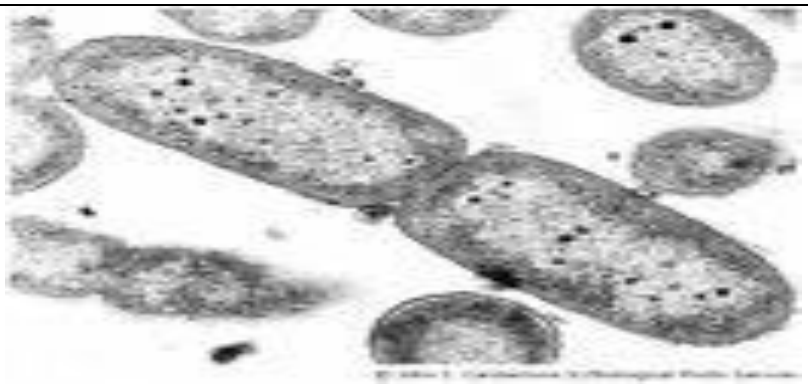


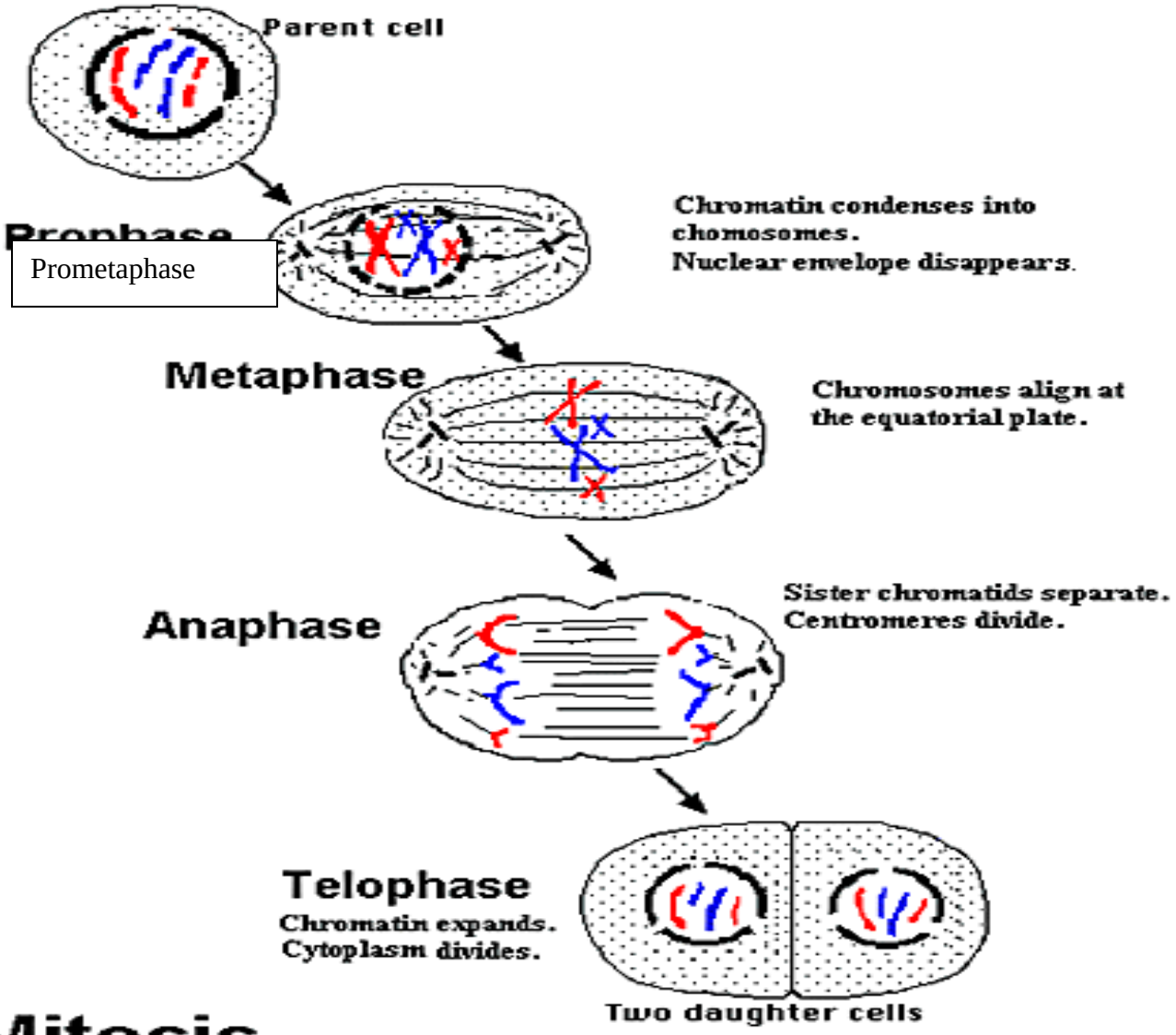
Telophase

- Chromosomes reach poles.
- Nuclear membrane begins to _____.
- Cleavage furrow forms pinching cell into two.
- Chromosomes begin to _____.



- Cytokinesis: Cell breaks into two (Cell Plate Visible in plants)



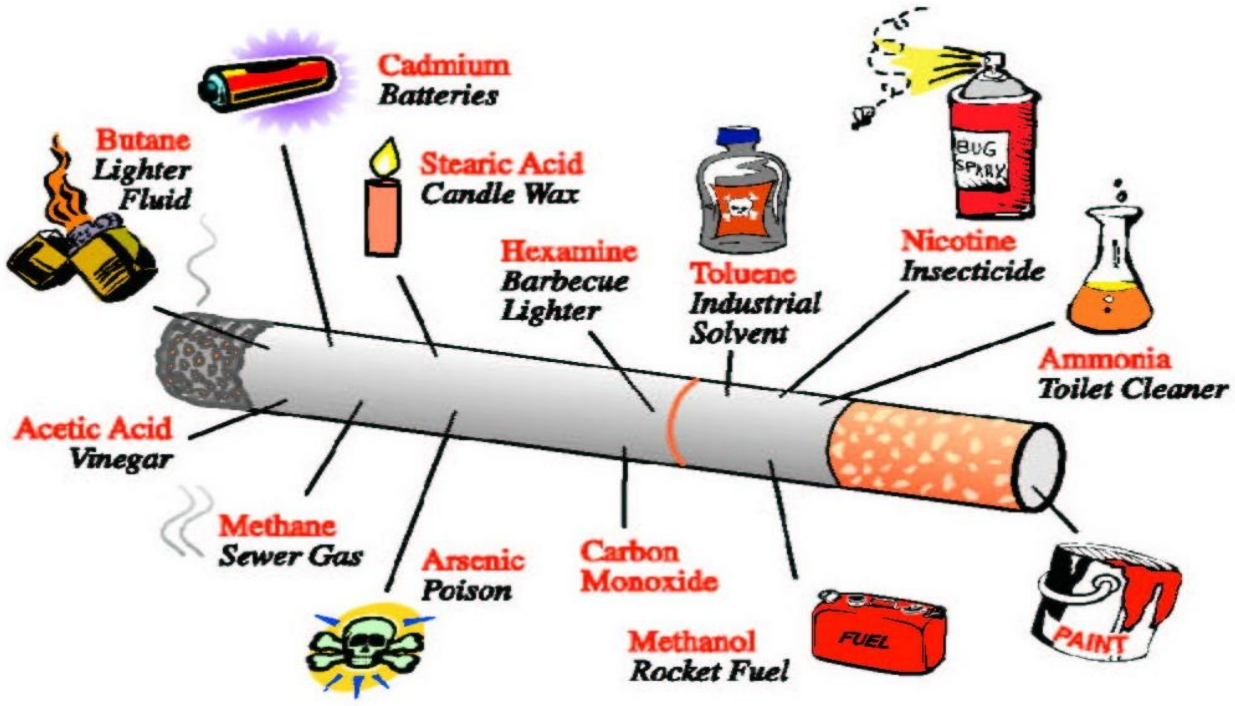


Cancer is: Uncontrolled, unregulated cell _____ and _____. Mitosis out of control.

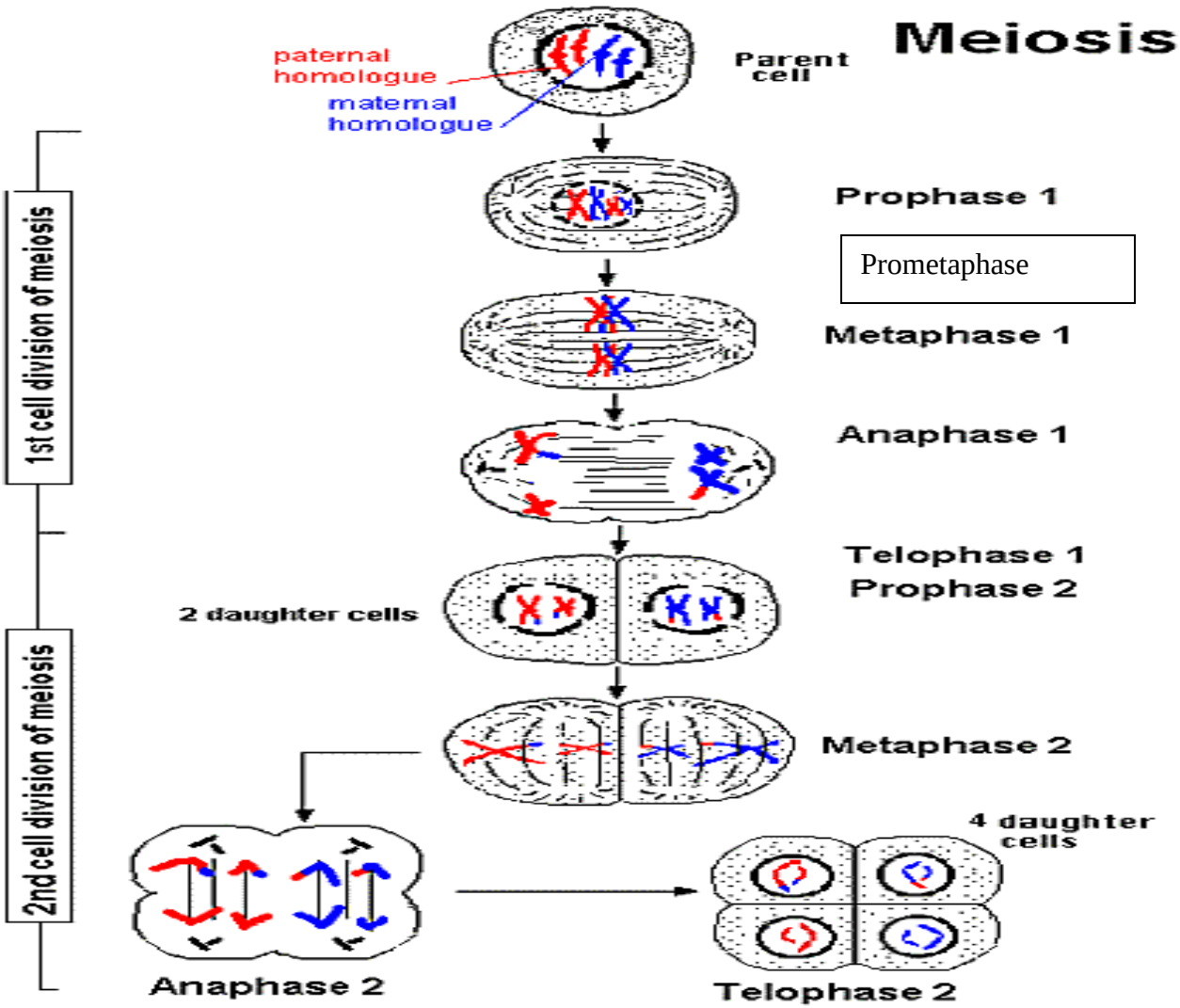
A few things that may help you avoid cancer.

- Don't _____ or chew
- Avoid _____ exposure (skin cancer)
- Exercise daily
- Eat _____
- Don't drink excessive alcohol
- Avoid _____ / energy exposure
- Avoid unprotected sex (_____virus)
- Get regular checks up with your doctor

What's in a cigarette?



Meiosis: Cell division that produces _____ cells.



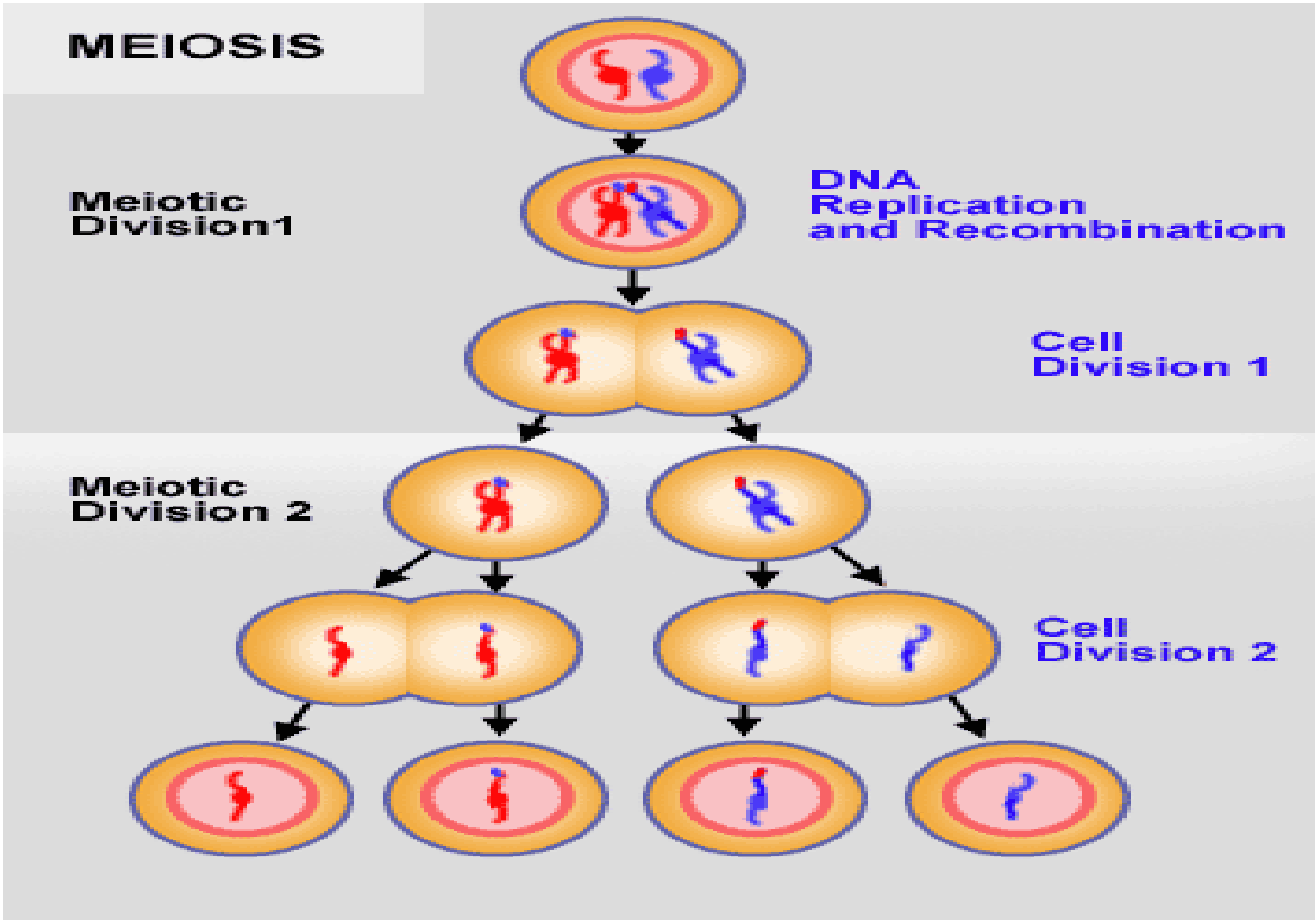
Meiosis involves

- Has _____cell divisions in meiosis,
- A _____in the amount of genetic material
  - Results in _____ the number of chromosomes
  - Crossing-Over
- Law of segregation (Heredity), states that allele pairs _____ or segregate

during gamete formation, and _____ unite at fertilization.

- A gene can exist in more than one form.
- Organisms inherit _____ alleles for each trait.
- When gametes are produced (by meiosis), allele pairs separate leaving each cell with a _____allele for each trait.

- Independent Assortment: Genes assort independently because they are located on _____ chromosomes in gamete formation.



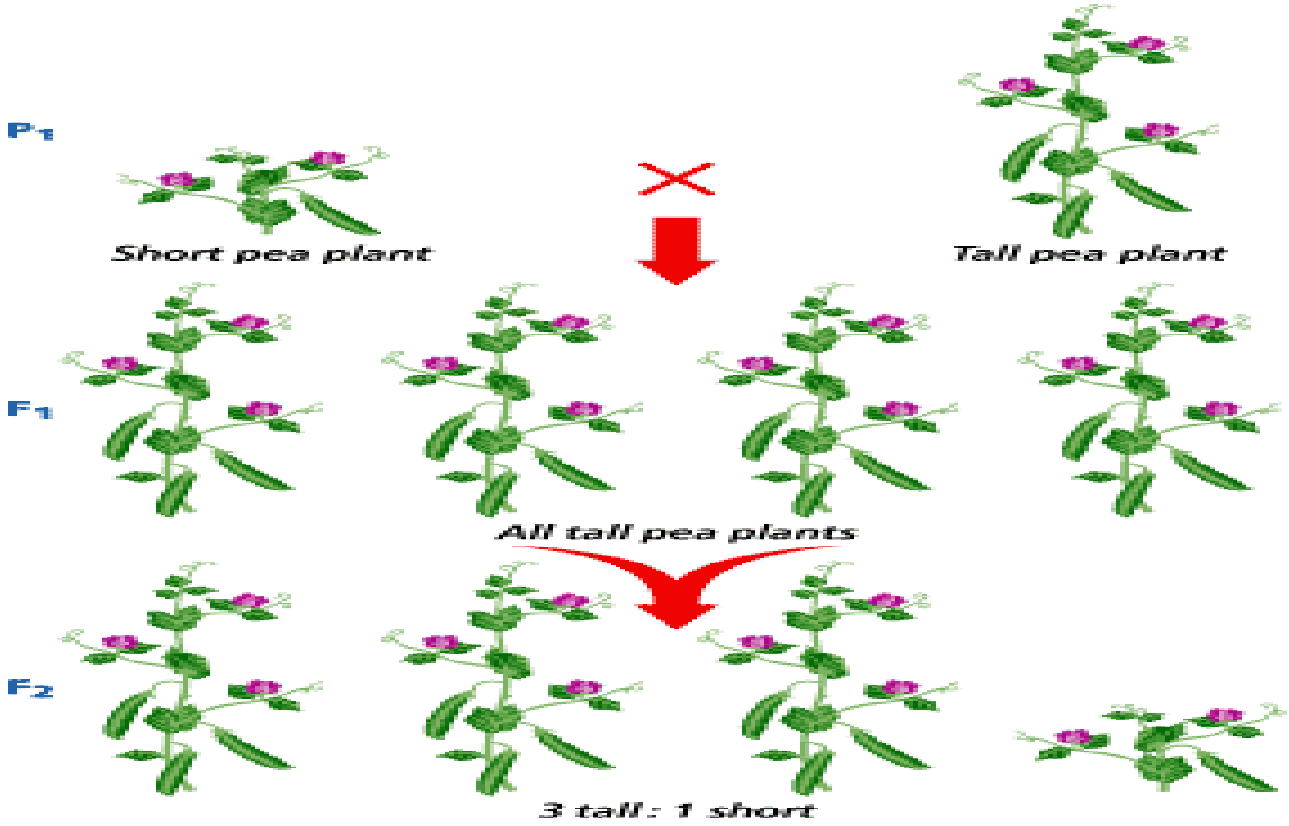
Meiosis involves.

- Sperm has _____ chromosomes (haploid)
- Egg has _____ chromosomes (haploid)
- When they meet you have 46 (_____)
- Crossing Over : Genetic segments of information are _____when the chromosomes are next to each other (_____ and creates millions of possibilities)
- Re_____ of genetic information
- Produces four different germ (reproductive cells)

Genetics Large Paragraph (Has all of the key terms)

- Gregor M_____: The father of modern genetics. He counted his results and kept statistical notes, much like your science journal. The year was 1851, a young priest from Vienna studied mathematics and science at the university. Upon finishing, he went back to priesthood and tended a garden outside of the monastery. He worked with pea plants and became curious as to why some pea plants had <u>different characteristics or **(_____)**</u>. Mendel seemed to notice that pea plants tended to <u>pass traits from parents to offspring, which is called **(_____)**</u>. Mendel started doing experiments with **(_____)** <u>plants, or plants that always produce offspring with the same trait as the parent</u>. For example, short pea plants always

produce short offspring. Mendel then decided to cross short pea plants with tall pea plants.



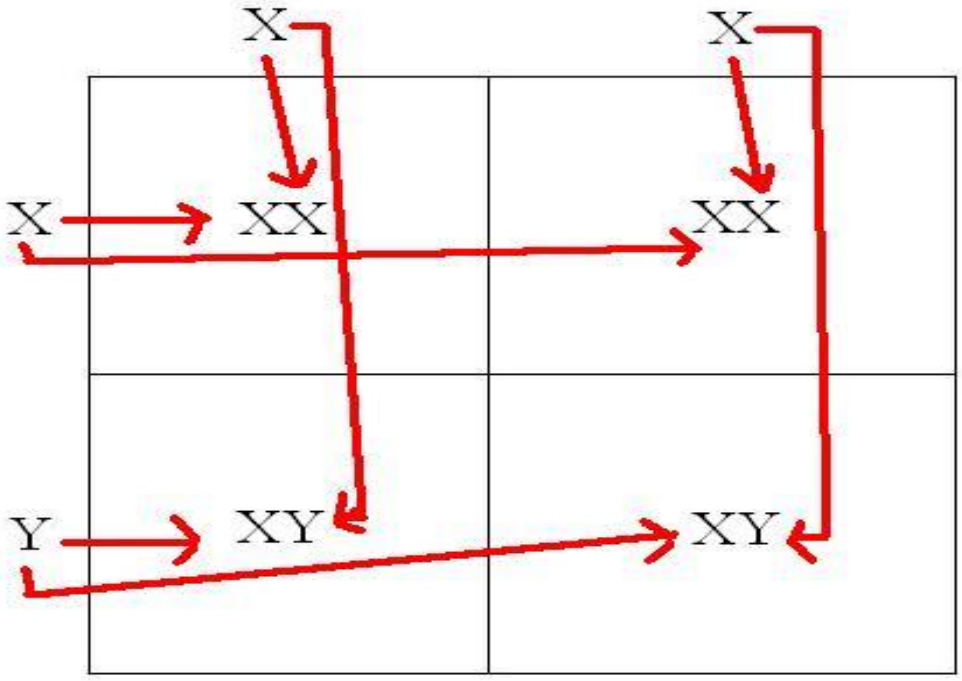
- An organism's **(_____)** is its physical appearance or its visible traits. An organism's **(_____)** is its genetic makeup, or allele combinations. From all of Mendel's' results, he reasoned that individual factors must control the inheritance of traits in peas. Mendel knew that the female contributes one factor, while the male contributes the other factor in **(_____)**. Today's scientists call the factors that control traits **(_____)**. Scientists call the different forms of gene alleles. A dominant allele is one whose trait always shows up in the organism when the allele is present. A **(_____)** is

covered up when the dominant allele is with it. A **(_____)** has two different alleles.

- Law of _____ (Heredity), states that allele pairs separate or segregate during gamete formation, and randomly unite at fertilization.
  - A _____ can exist in more than one form.
  - Organisms inherit _____ alleles for each trait.
  - When gametes are produced (by meiosis), allele pairs _____leaving each cell with a single allele for each trait.

- T = Dominant
- *t* = Recessive
- TT = Two dominant
- *tt* = Two recessive
- T*t* = One dominant, one recessive

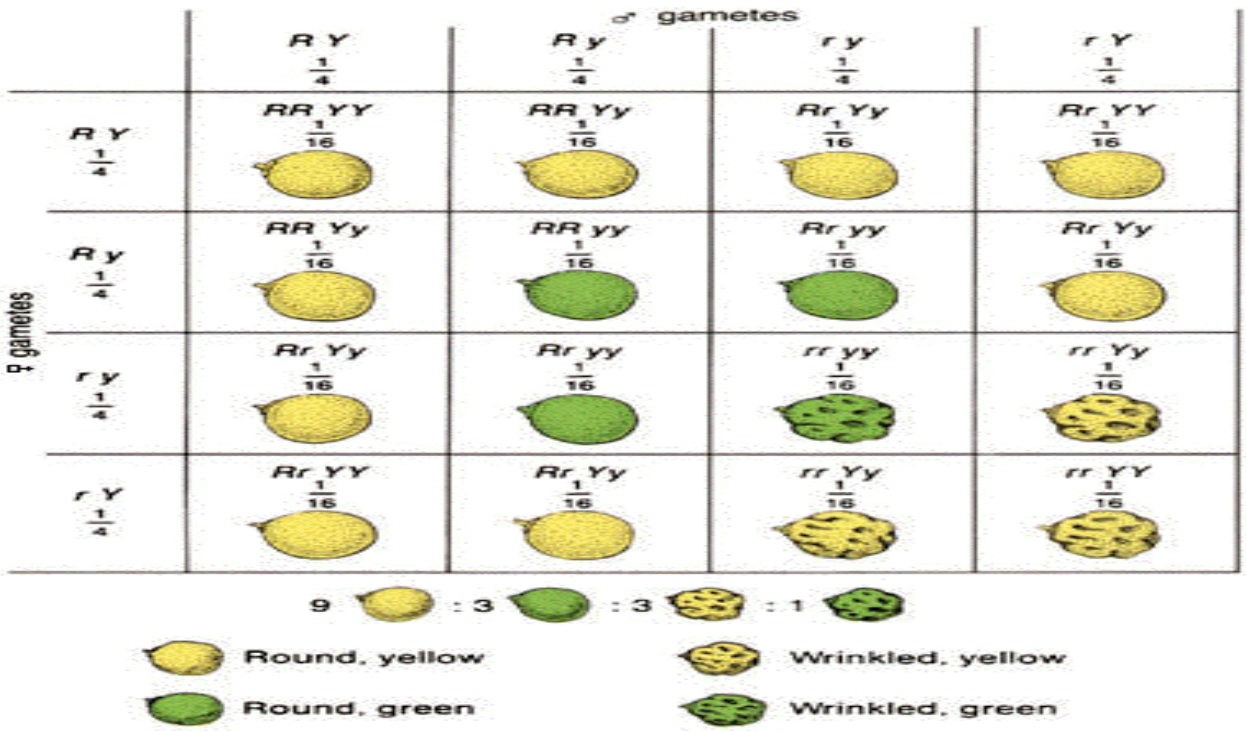
P_____ Square: A diagram that is used to predict the outcome of a particular cross



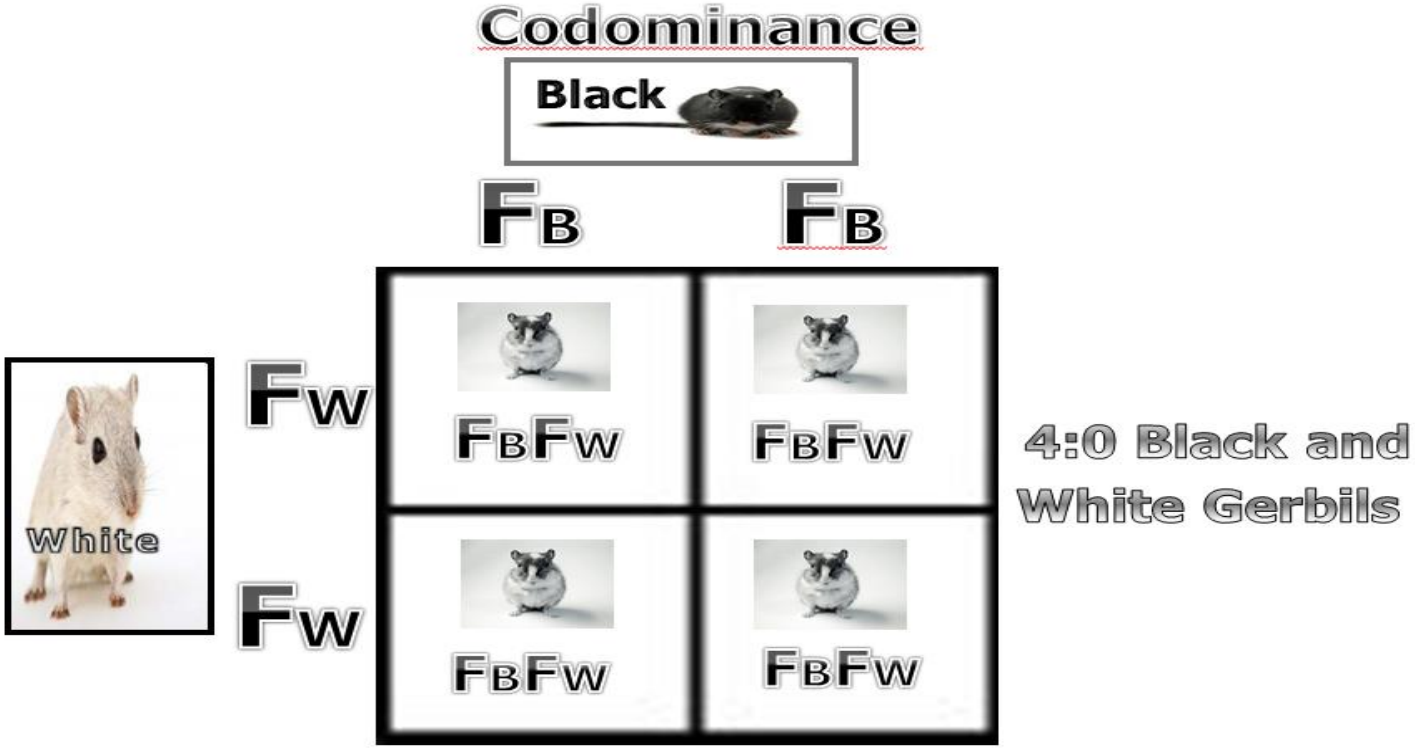
Genetics deals heavily with _____,
or the likelihood that a particular event will occur.

- **_____zygous- Has two identical alleles TT or *tt***
- ***_____zygous Dominant: All dominant***
- ***_____zygous- Has two different alleles Tt***

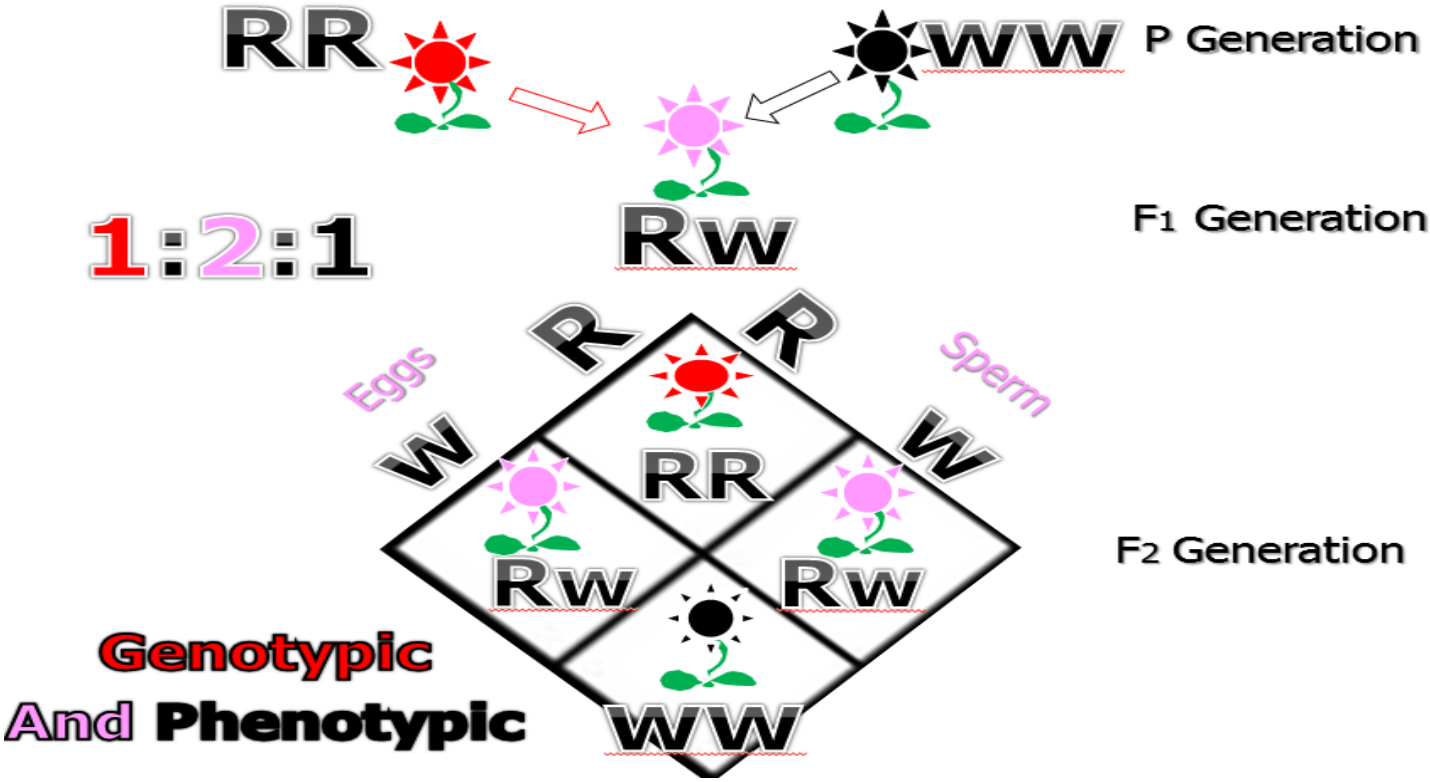
Dihybrid Cross



Codominance or a relationship among alleles where _____ alleles contribute to the phenotype of the heterozygote.



- Incomplete Dominance: _____ allele for a specific trait is not completely dominant over the other.



New Area of Focus: BIO-ETHICS

- Bio-Ethics: The study of ethical issues raised by the developments in life science _____.

- Stem cells: Cells that have the remarkable potential to develop into many different cell _____ in the body.

- Cloning: A method of reproduction used to copy a cell or an individual (producing a clone) from their _____.