

# DNA NOTES

## DNA

- Deoxyribonucleic Acid
- found in nucleus of cell
- chromosomes are made of DNA

## STRUCTURE

- twisted ladder shape  
(DOUBLE HELIX)
- sides of ladder are made of sugar and phosphate groups
- rungs or steps are made of nitrogen bases:

ADENINE (A)

THYMINE (T)

GUANINE (G)

CYTOSINE (C)

- Adenine pairs with Thymine

A - T                  T - A

- Guanine pairs with Cytosine

G - C                  C - G

## FUNCTION

- copies itself (REPLICATION) during cell division (**mitosis**)
- DNA codes proteins which control all cellular activities

## DNA CODE

- only 4 letters in DNA code “alphabet”:

A T G C

- 3 base letters make a DNA code “word” called a CODON
- codons are directions for making 20 different AMINO ACIDS which make PROTEINS
- mRNA “reads” DNA and sends message to ribosomes where tRNA brings correct amino acids together to form proteins
- proteins control cellular activities like growth, cell repair, digestion, eye color, etc.

## Analogy please! . . .

chef

ribosome

cookbook

chromosomes

recipes

genes

ingredients

amino acids

meal

proteins

## MUTATIONS

- letters of DNA code must be read in proper order to make any sense or **mutation** may occur
- is a change in the cell that causes an incorrect protein to be made
- mutations can be helpful as well as harmful
- **substitutions**  
changing one base for another  
(M&M's instead of chocolate chips)  
(salt instead of sugar)
- **deletions**  
dropping a base from the code  
(forgot the nuts)  
(forgot the flour)
- **additions**  
adding a base to the code  
(added M&M's to chocolate chips)  
(added motor oil)