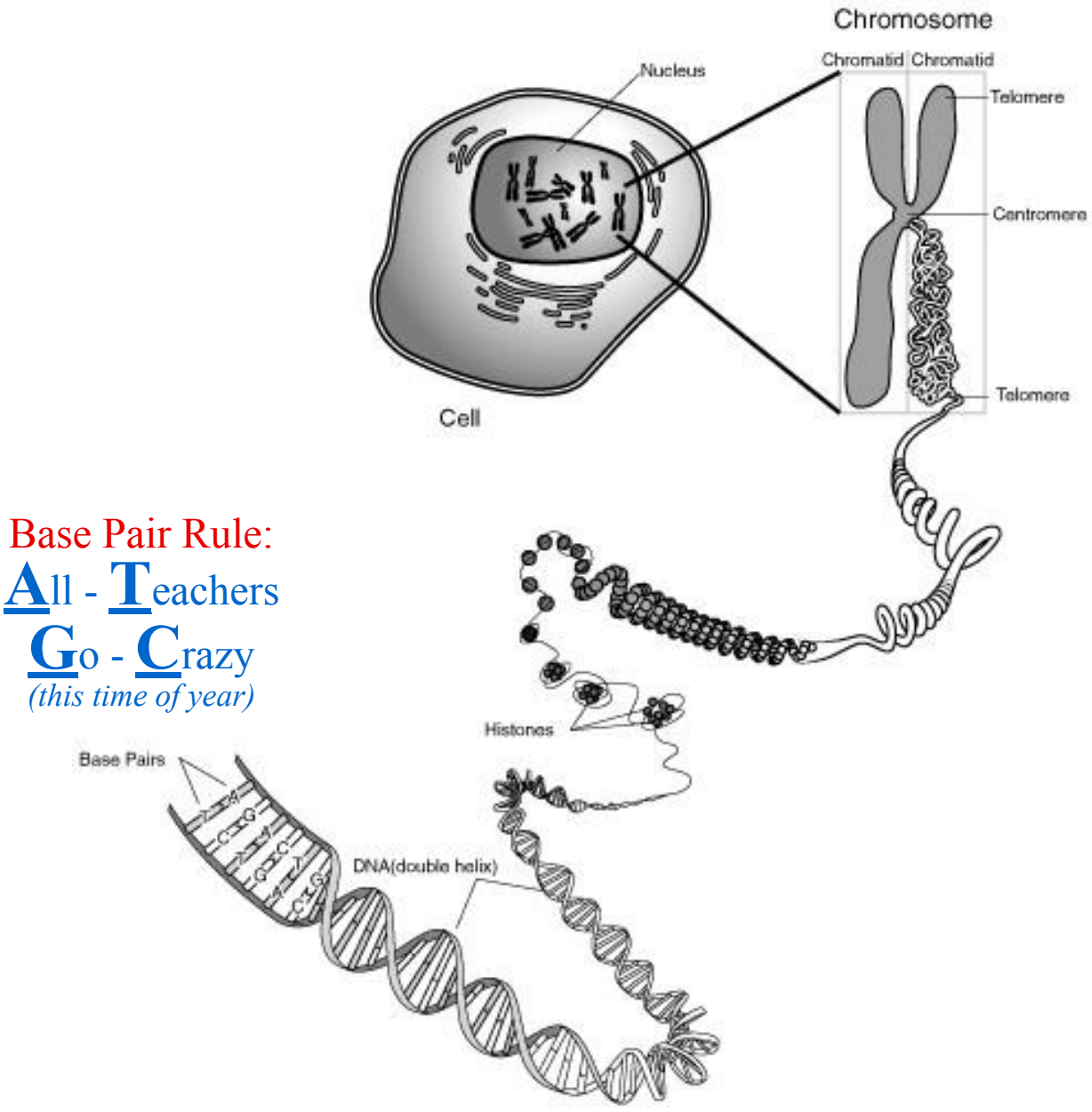
TOPIC 2: HEREDITY AND GENETICS

11. ___Heredity___ - is the passing of genetic information from one generation to the next through reproduction.

12. The hereditary information (**DNA**) is organized in the form of genes located on ___chromosomes___ in the ___nucleus___ of each cell.

Organization of the Nucleus:

[*smallest*] Nucleotide → DNA → Gene → Chromosomes → Nucleus [*biggest*]



Base Pair Rule:
All - **T**eachers
Go - **C**razy
(this time of year)

13. Differences between asexual and sexual reproduction:

Asexual Reproduction	***Sexual Reproduction***
ONE parent or cell.	TWO parents or cells.
Offspring genetically IDENTICAL	Offspring genetically DIFFERENT
	Involves meiosis and fertilization.

14. **Clones** - organisms with identical genetic copies.

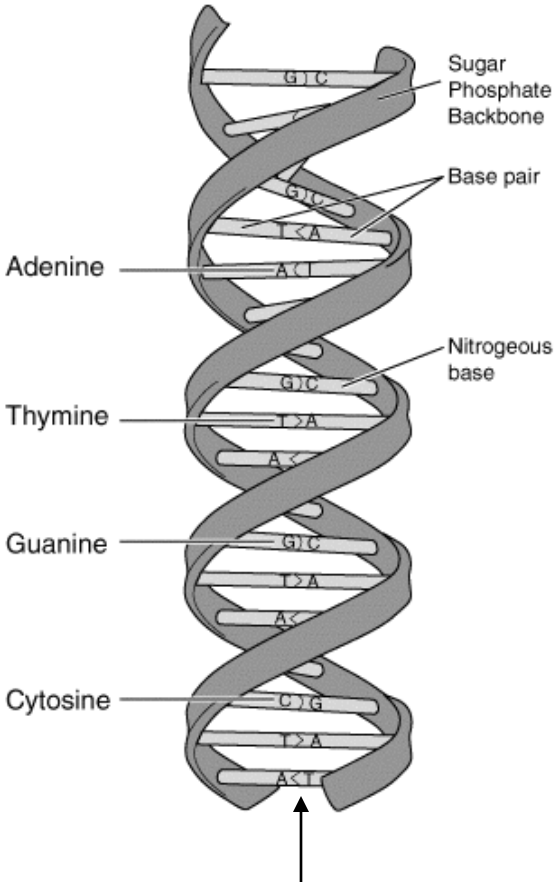
15. DNA is made of a **sugar**, a **phosphate** and a **base**

16. Bases are A, T, G, C **A** PAIRS WITH **T**

G PAIRS WITH **C**

All Teachers Go Crazy

Double Helix Structure of DNA



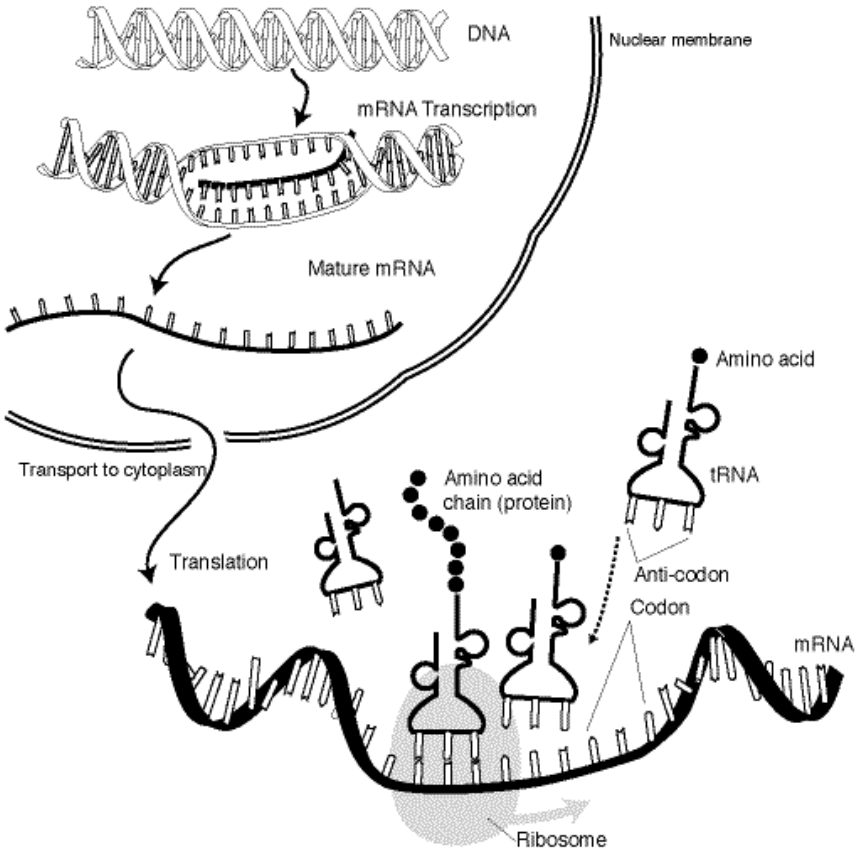
WEAK H-bonds

17. How does DNA make a protein?

DNA *is stuck inside the* ***NUCLEUS****, so it send* ***mRNA*** *to the* ***RIBOSOME*** *where the message is read and used to direct the* ***tRNA's*** *to bring in the right* ***AMINO ACIDS*** *to the* ***RIBOSOME*** *to make a* ***PROTEIN****.*

DNA ----------> mRNA ----------> protein

Protein Synthesis:



18. **Mutations** - any *alteration* or CHANGE in DNA

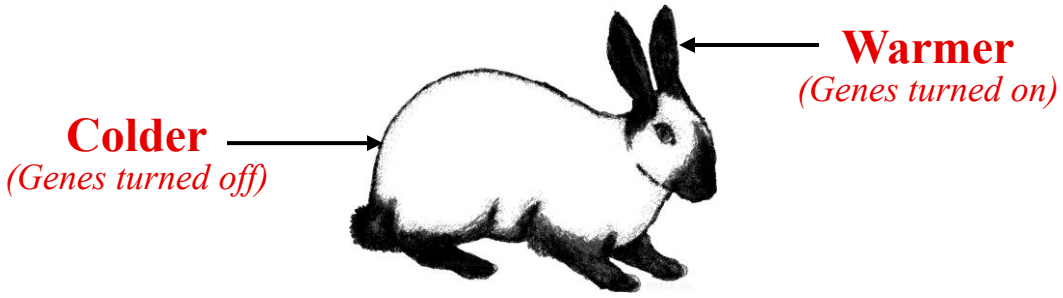
(a) **Substitution** - when one base is put in the place of another

(b) **Deletions** - when one base(s) is left out

(c) **Addition** - when one base is added.

(d) - - - - - - - - - [redacted]

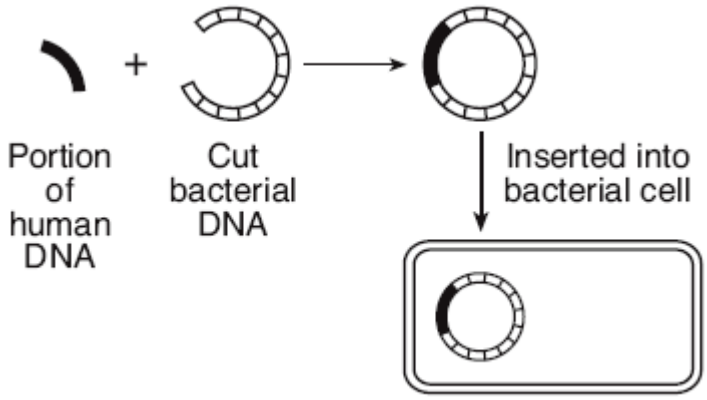
19. An organism's environment (*temperature*) can affect the way some genes are ***expressed***. **Example**: *Himalayan Rabbit*



20. **Genetic Engineering** - is a technology that humans use to alter the genetic instructions in organisms.

21. **Gene Splicing** *(Recombinant DNA)* - cutting DNA from one organism and placing it into another.

Example: *Insulin* - putting the genes for insulin into bacteria so the bacteria can produce human **insulin** for **diabetics**



22. **Selective Breeding** - a process that produces domestic animals and new varieties of plants with traits that are desirable.

23. **Species** - is a group of closely related organisms that share certain characteristics and can produce new individuals via reproduction.

24. **Cancer** - uncontrolled cell division (MITOSIS).
- can result from certain genetic mutations