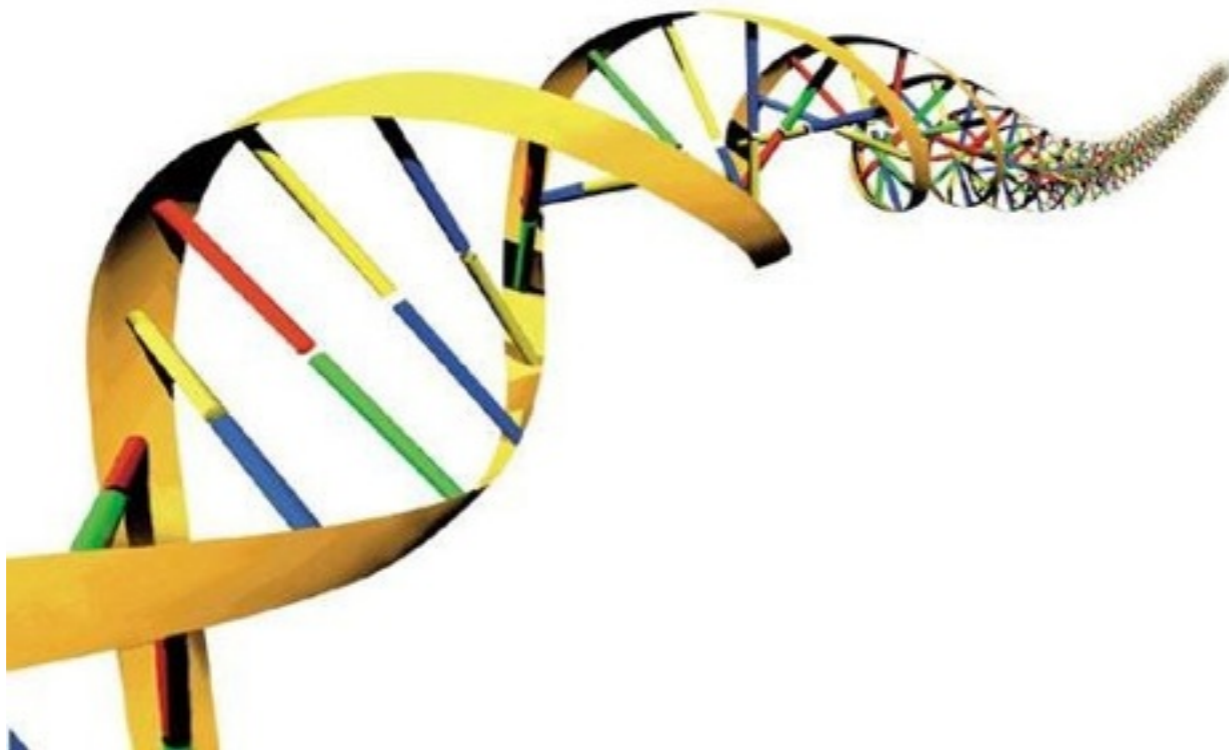


What do Genes look
like?

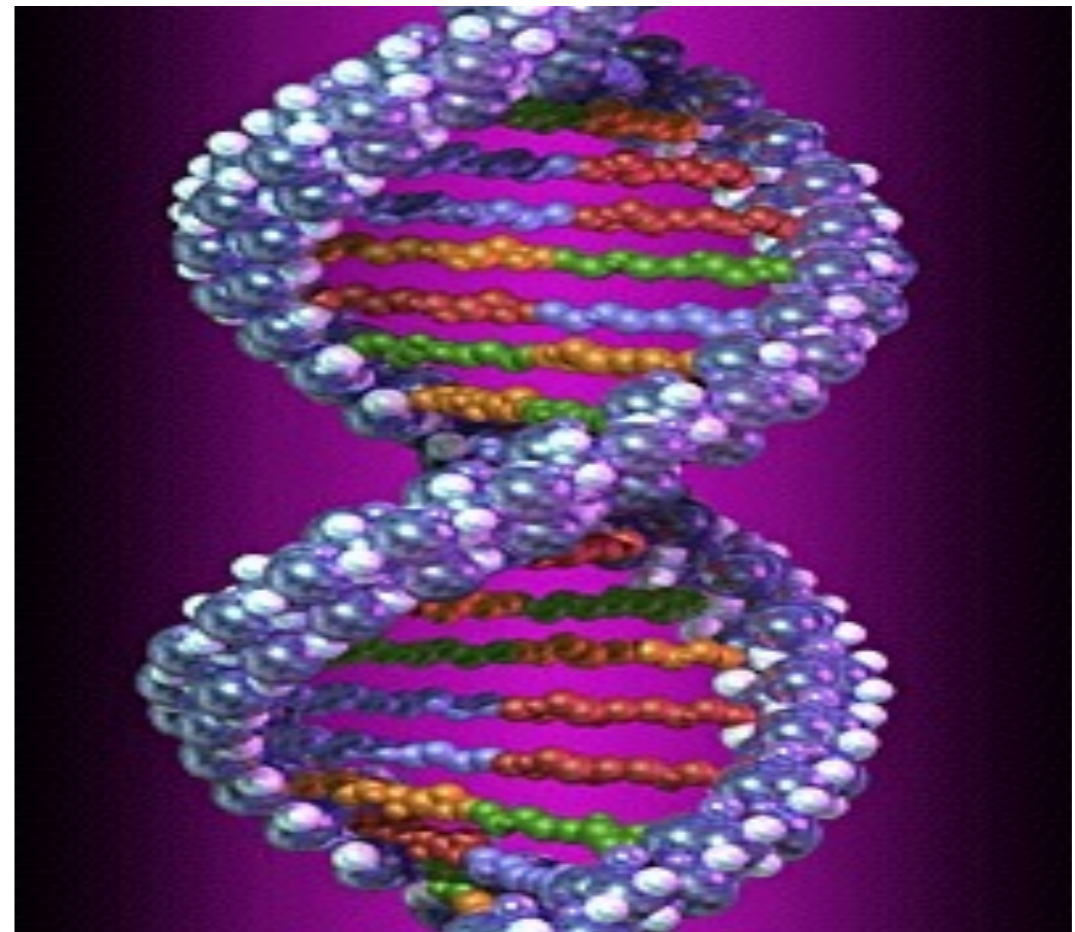
What are Genes?

- Genes are located on the chromosomes and code for traits that are passed from parent to offspring.



What is DNA?

- DNA is the molecule that makes up chromosomes and therefore genes. DNA is short for Deoxyribonucleic Acid.



What are functions of genes?

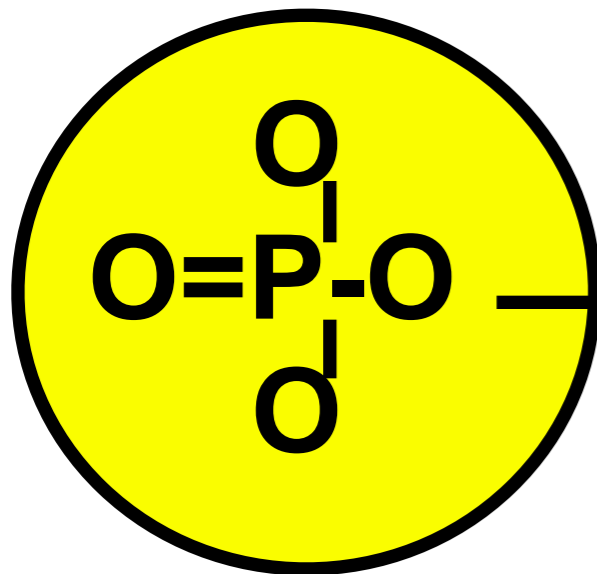
- The gene must be able to supply instructions for cell processes and for building cell structures. It must be able to be copied each time the cell divides.

What are Nucleotides?

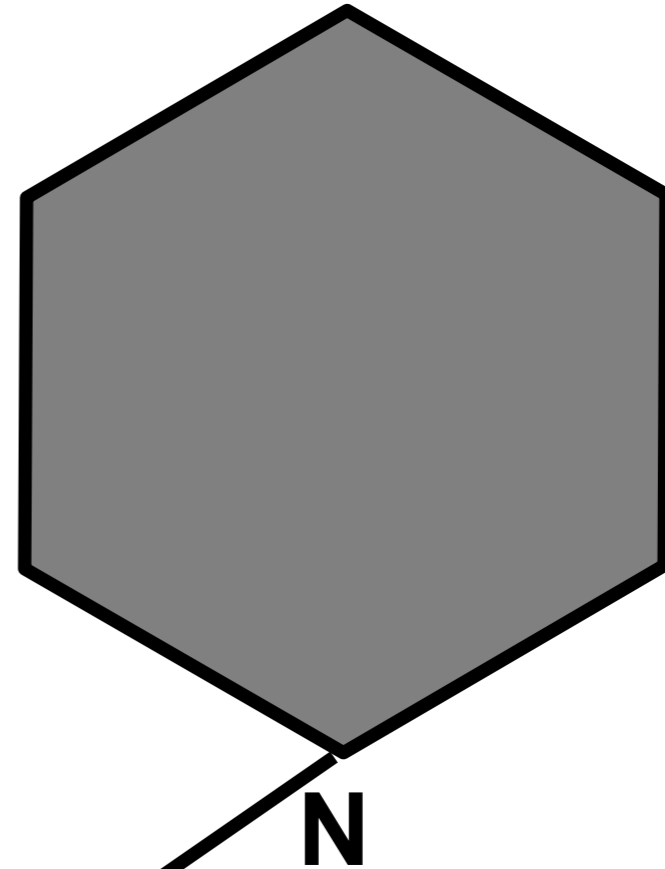
- Nucleotides are the 4 subunits that make up DNA. A nucleotide is made up of a sugar, a phosphate, and a base.
- Nucleotides are composed of 4 different bases, adenine, thymine, cytosine, and guanine. The bases are identified by their first letter.

DNA Nucleotide

Phosphate
Group



⁵
CH₂



Nitrogenous base
(A, G, C, or T)

Sugar
(deoxyribose)

C⁴

C¹

C³

C²

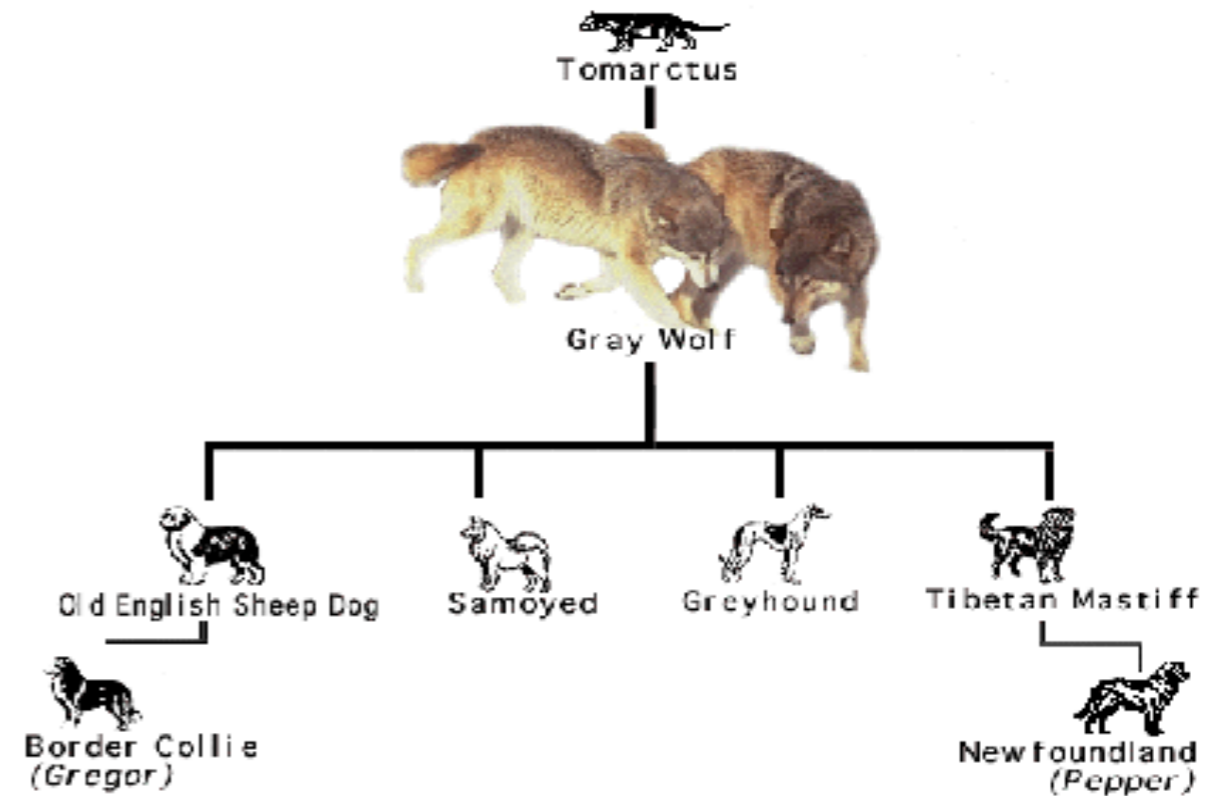
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Genetic Diversity...

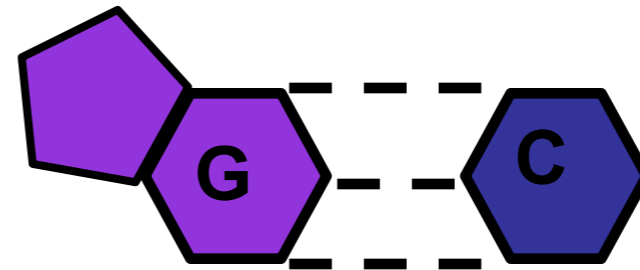
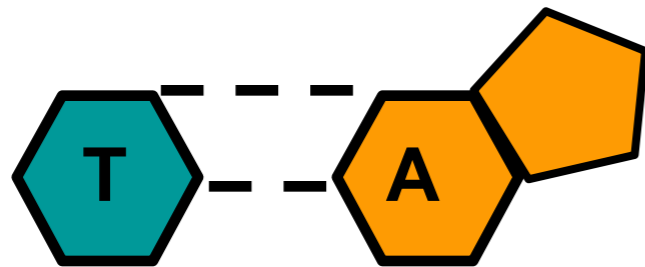
- Different arrangements of **NUCLEOTIDES** in a nucleic acid (DNA) provides the key to **DIVERSITY** among living organisms.

Family Tree



What is Chargaff's Rule?

- There are equal amounts of thymine and adenine, and equal amounts of cytosine and guanine



Who was Rosalind Franklin?

- Create X-Ray images that revealed the shape of the DNA molecule.



Who were Watson and Crick?

- Used the X-Ray images developed by Franklin to create a model of DNA. They created the double helix model to predict how DNA is copied.



What does DNA look Like?

- Shaped like a twisted ladder called a double helix.

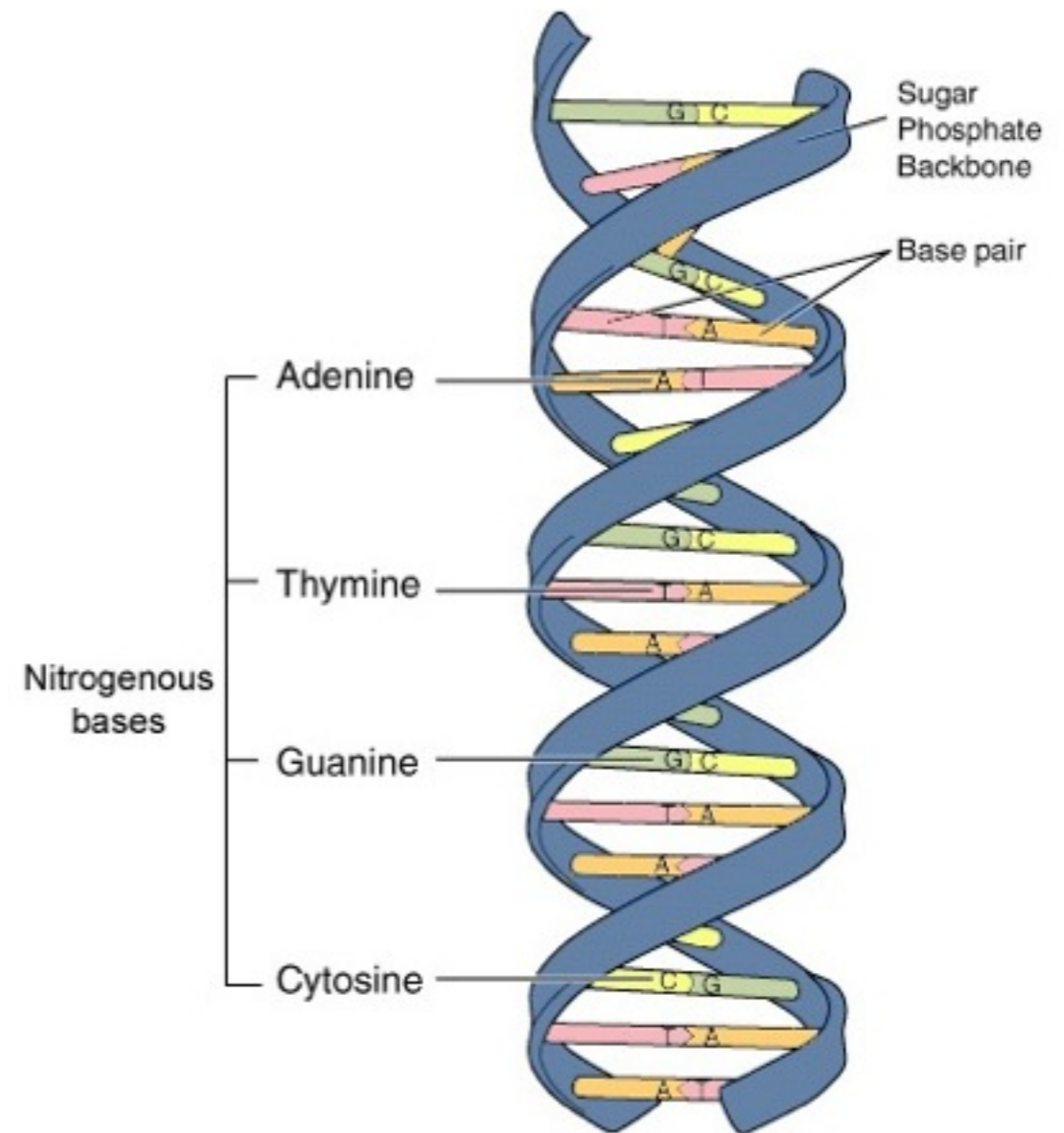
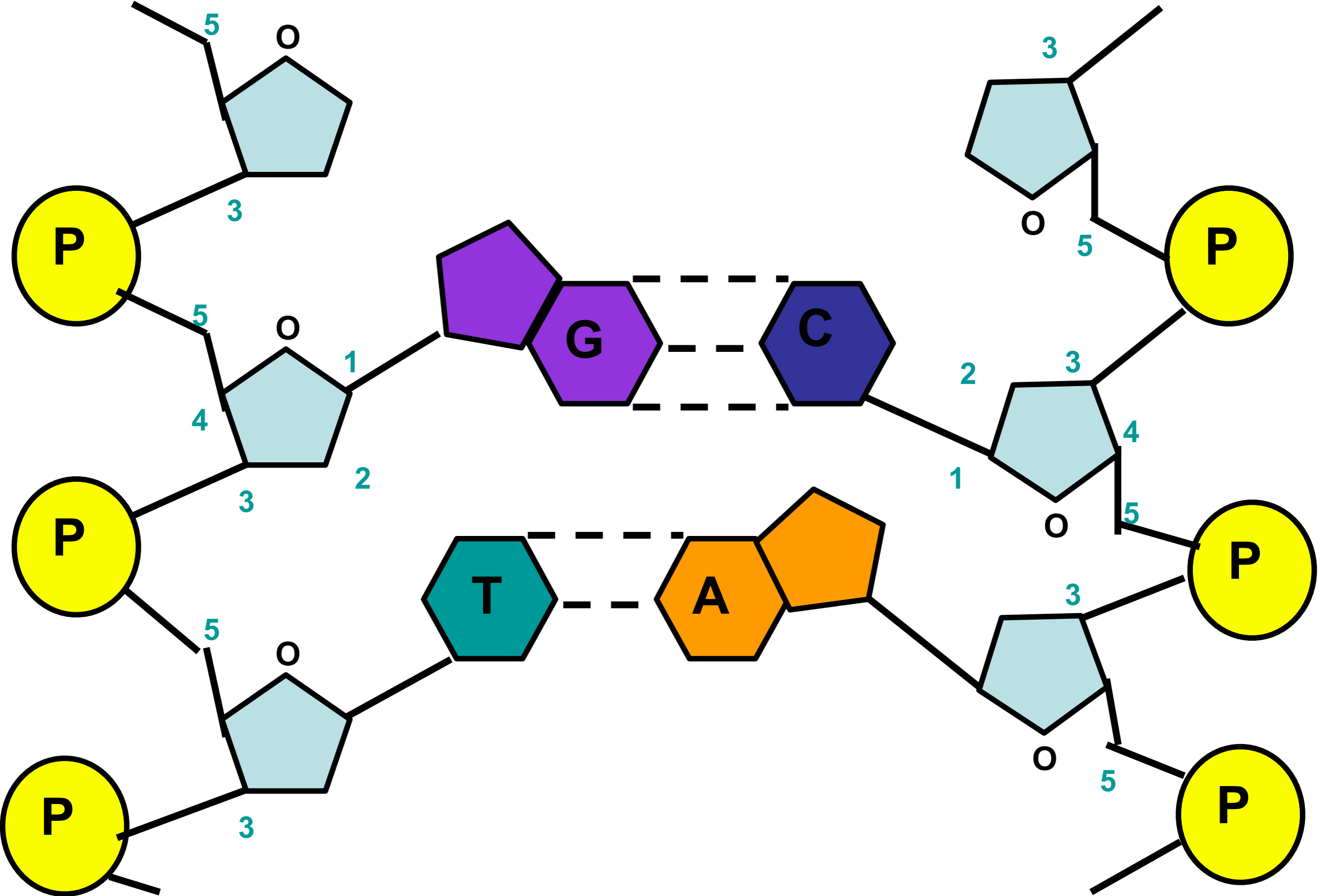


Image adapted from: National Human Genome Research Institute.

DNA Double Helix



What is Base Pairing

- Cytosine pairs up with Guanine and Thymine pairs with Adenine.

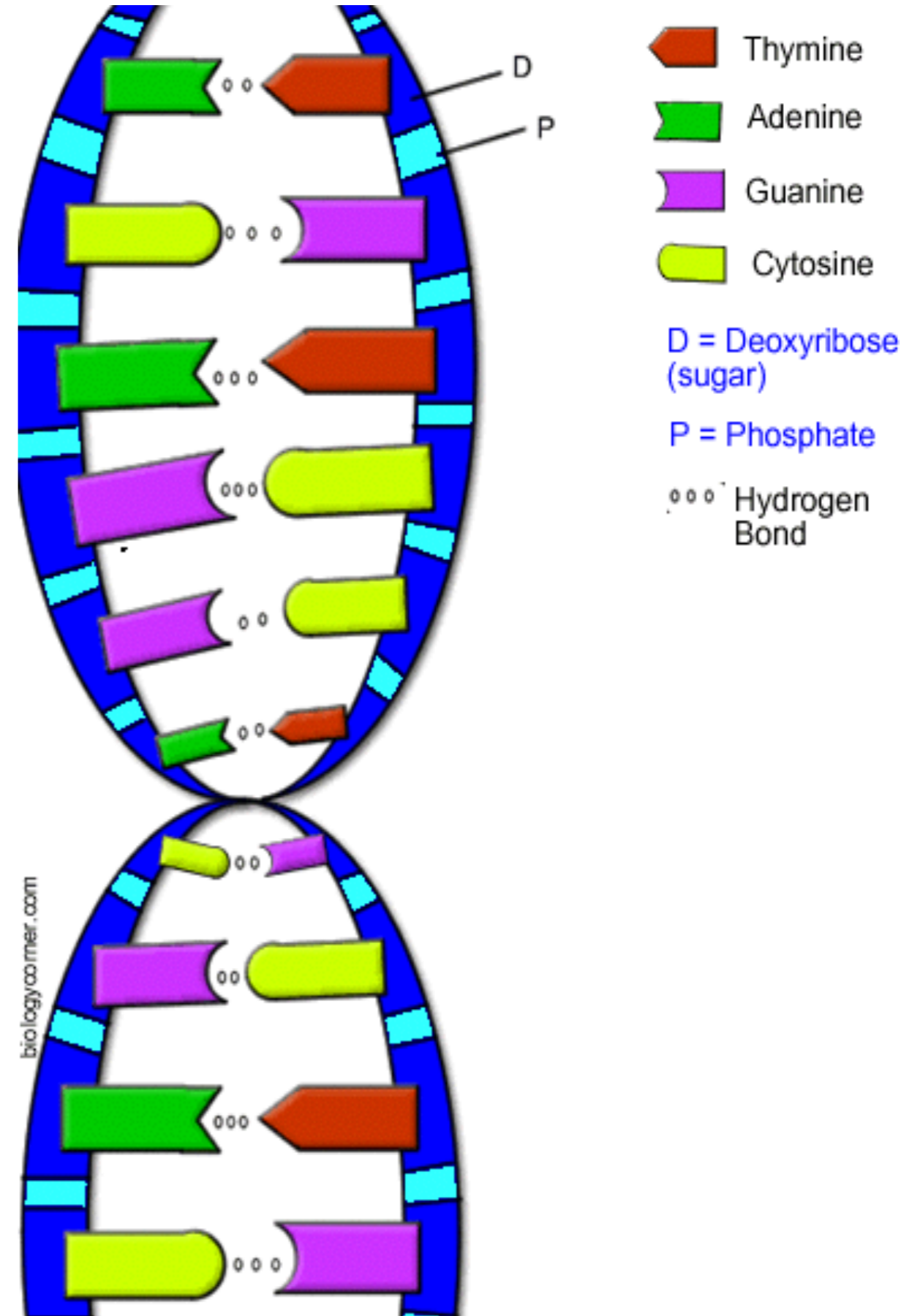
Base-Pair Rule

Adenine $\langle == \rangle$ Thymine

Guanine $\langle == \rangle$ Cytosine

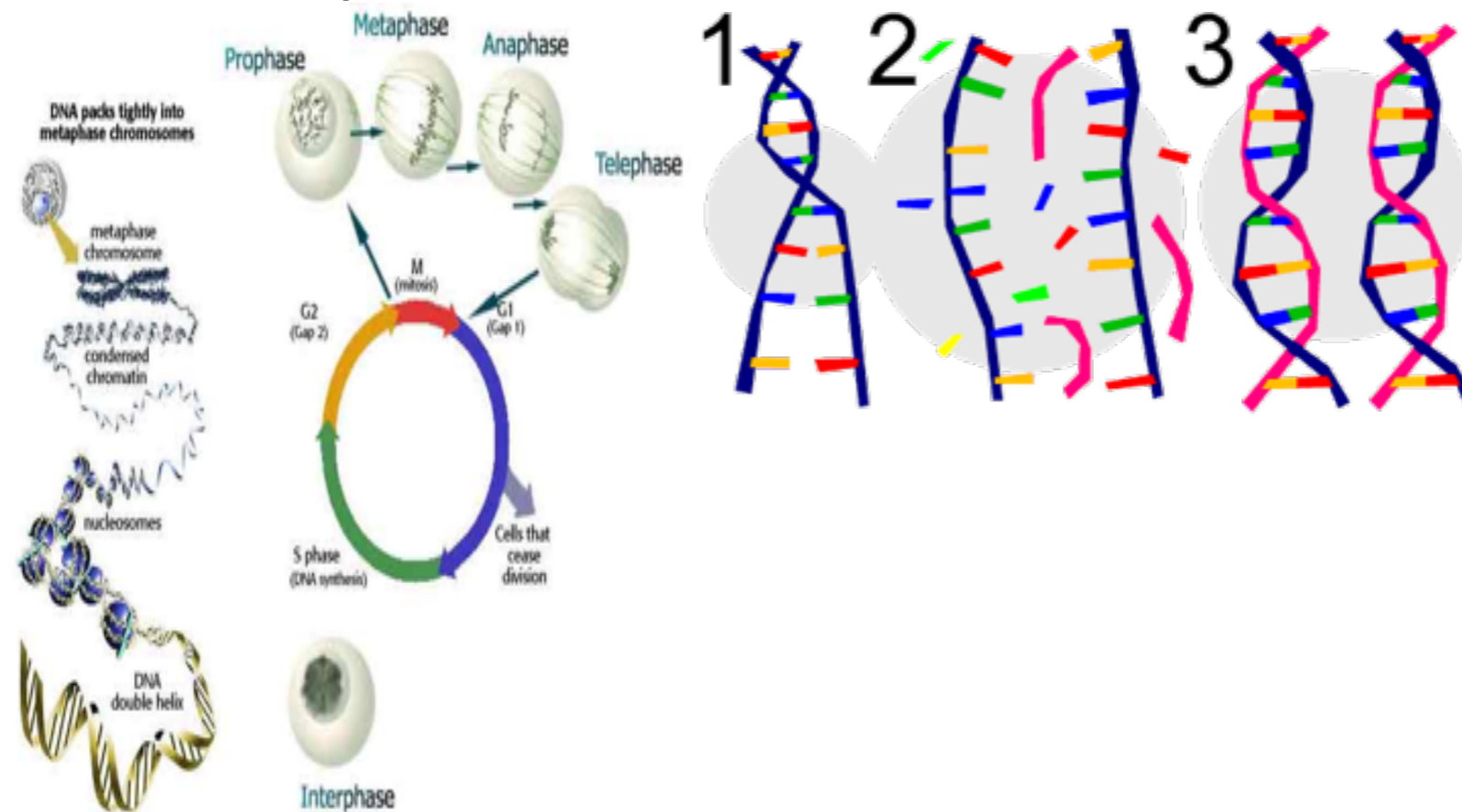
The sides of the DNA ladder are phosphate & sugar

held together by hydrogen bonds



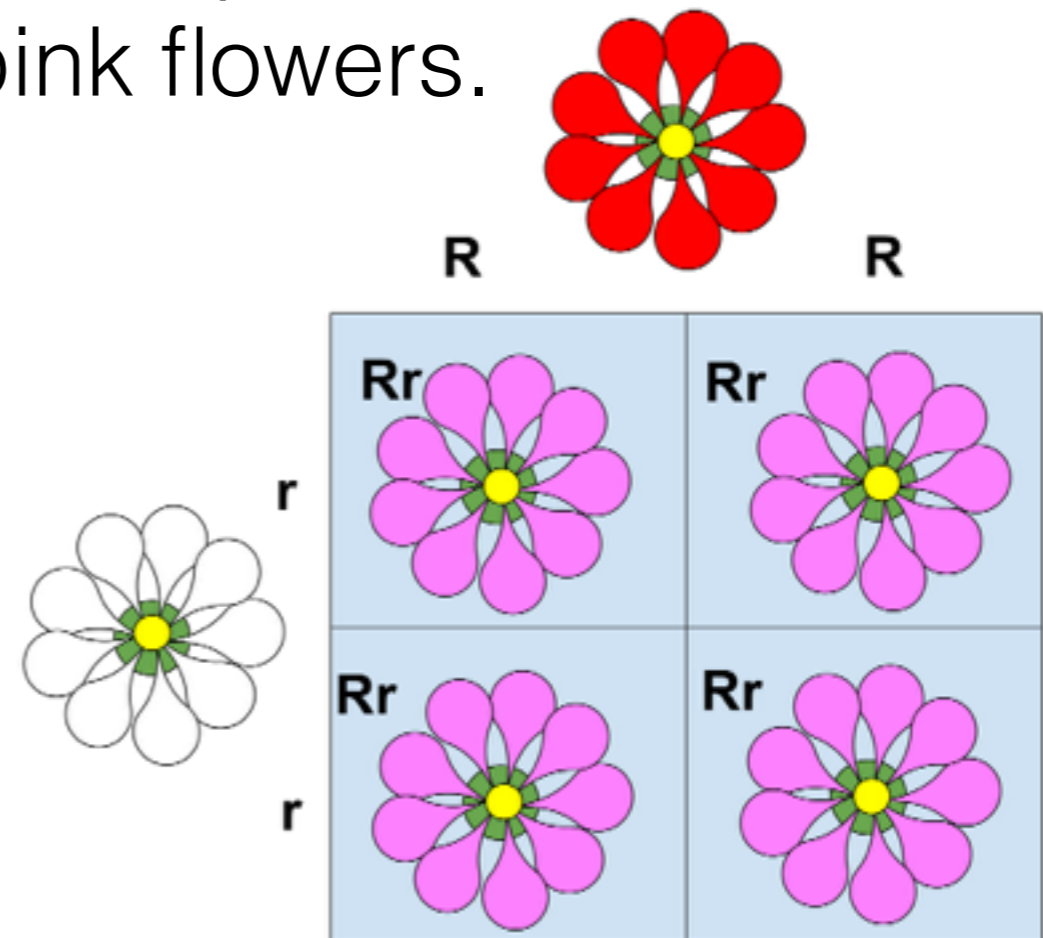
How does DNA Get Copied

- DNA has 2 complementary strands. Each base pairs up with another complementary base on the other strand. The DNA molecule untwists, unzips or splits down the middle, and then an enzyme pairs new bases up and creates 2 identical strands.



What is incomplete Dominance?

- When one allele is not dominant over the other and both alleles are expressed. Example: Red flowers and White flowers creating pink flowers.



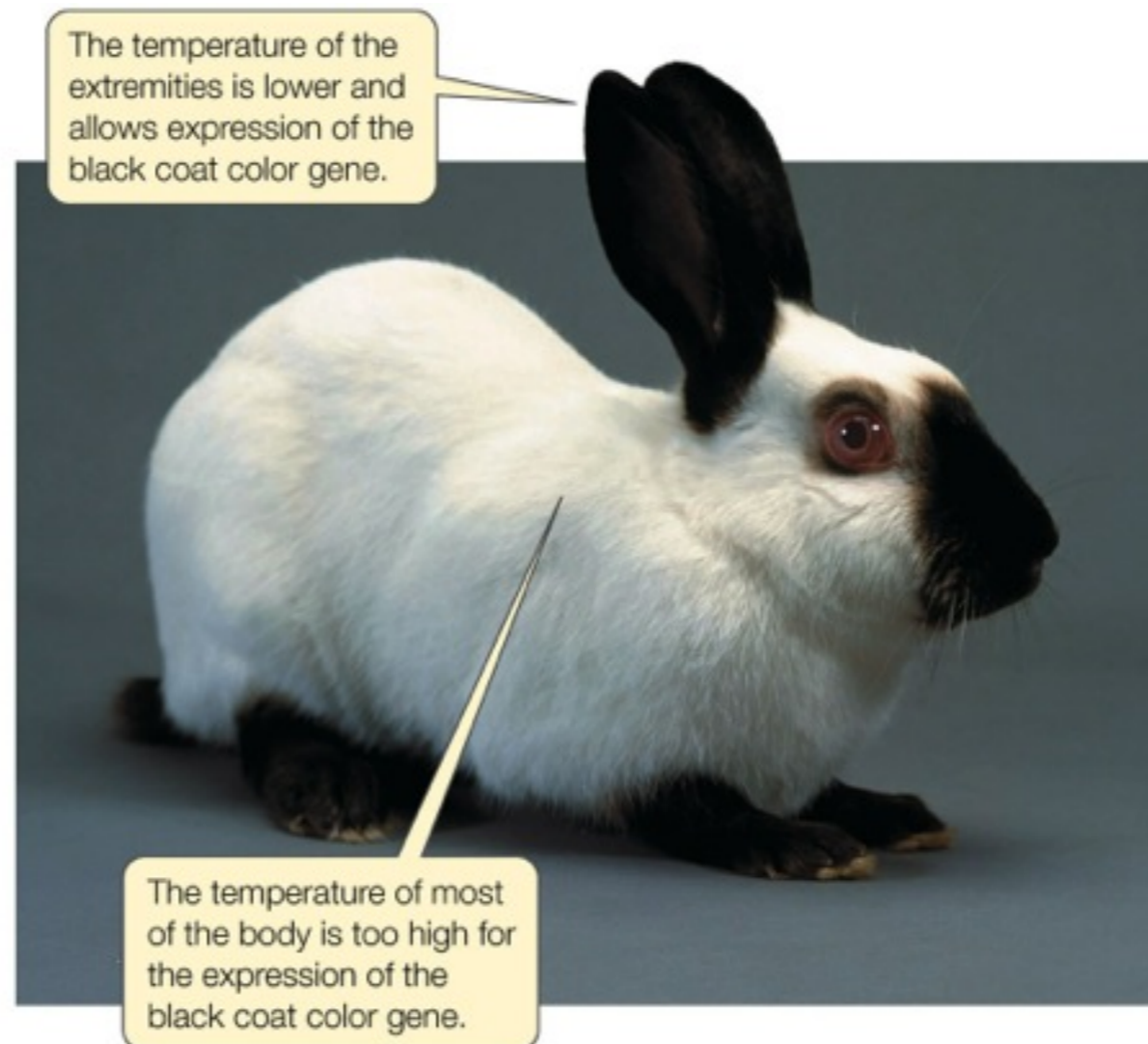
Gene and trait influence

- One gene can control multiple traits such as eye color and fur in a white tiger.
- One traits has multiple genes that influence it. Eye color has multiple genes that effect the amount of pigment that results in different shades.

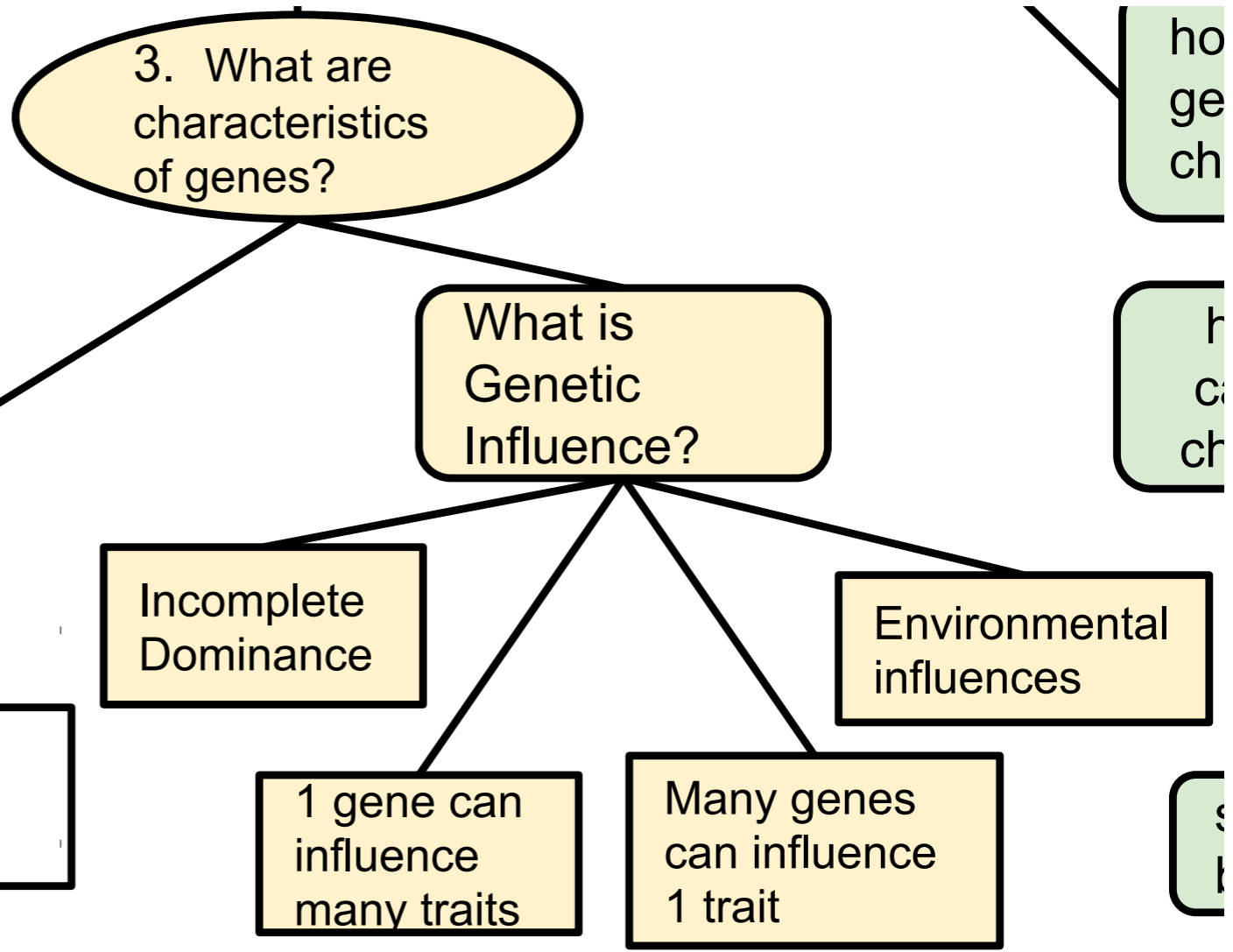
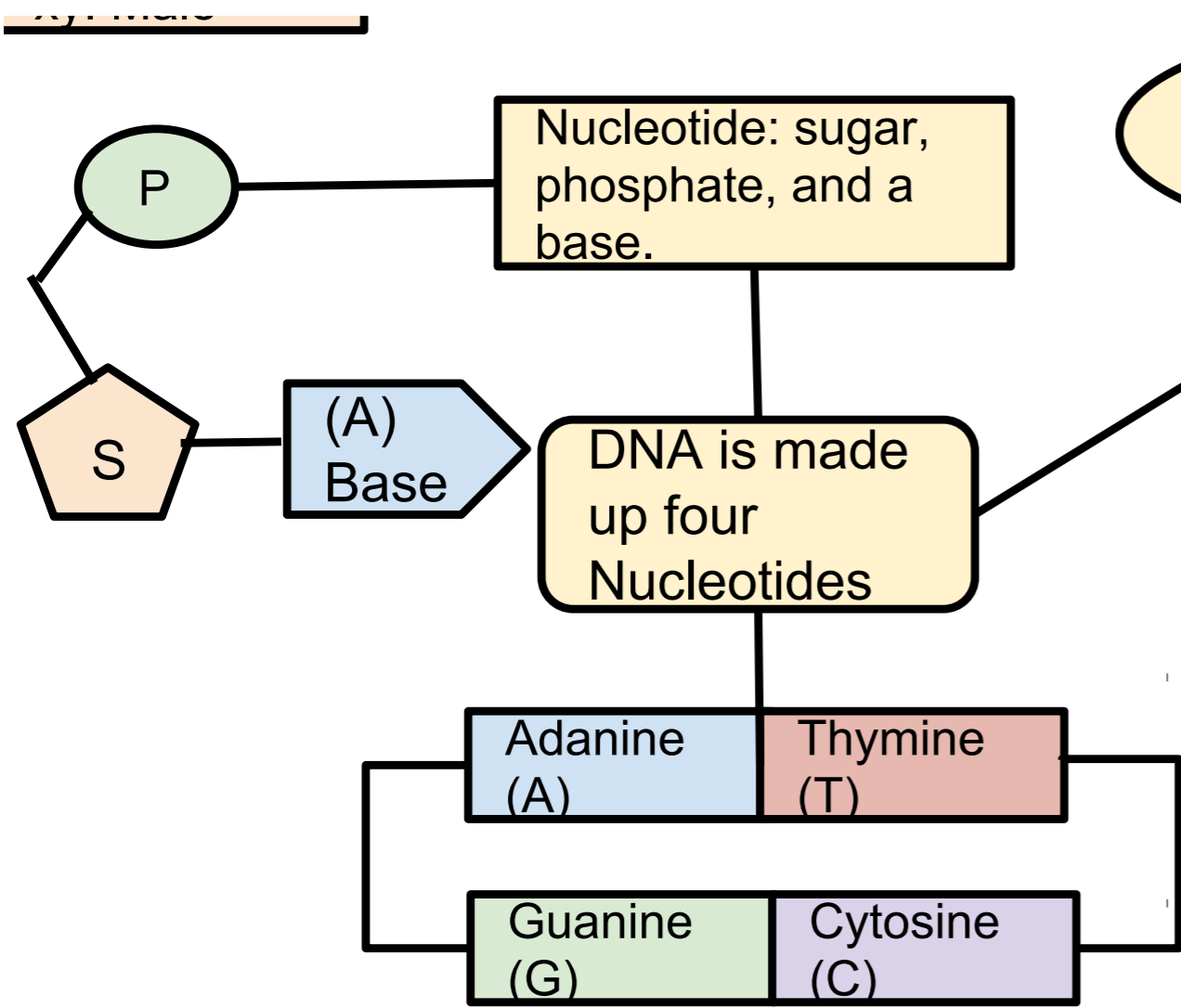


Environmental Impact

- Traits can be effected by the environment. Diet, nutrients, water, etc... can influence how traits are shown.



LIFE 9e, Figure 12.16



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