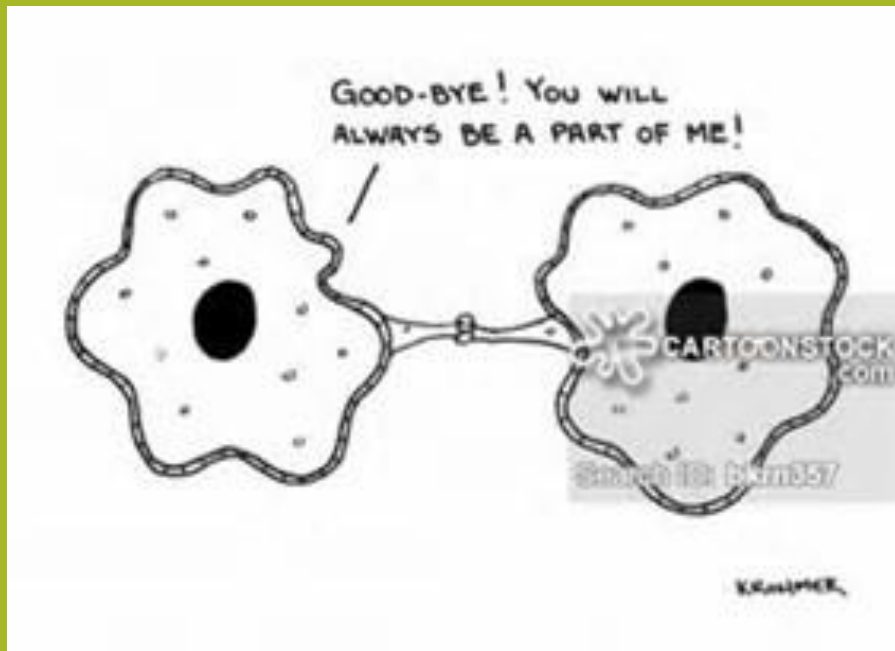


# CELL REPRODUCTION

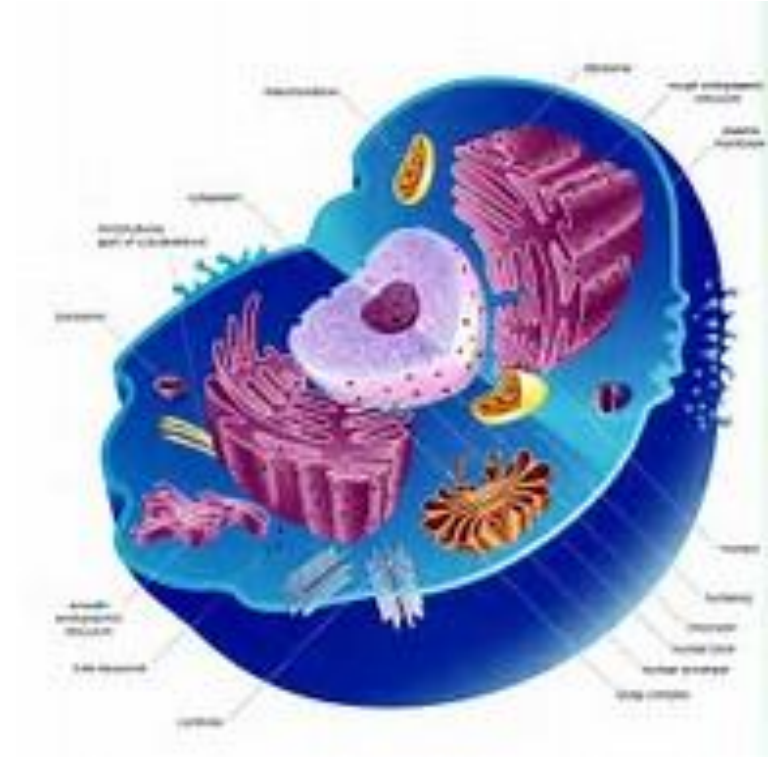


- Take a moment to think about all the different kinds of fruit, vegetables and meats that you can find at a market (think Granville island)
- How do they differ in size? In shape? Cells?



# Why is the reproduction of cells important?

- Consider that each of these began at the very start of its life as one single cell
- So did I and so did you
- So did every other living thing on earth
- What about growth and repair?

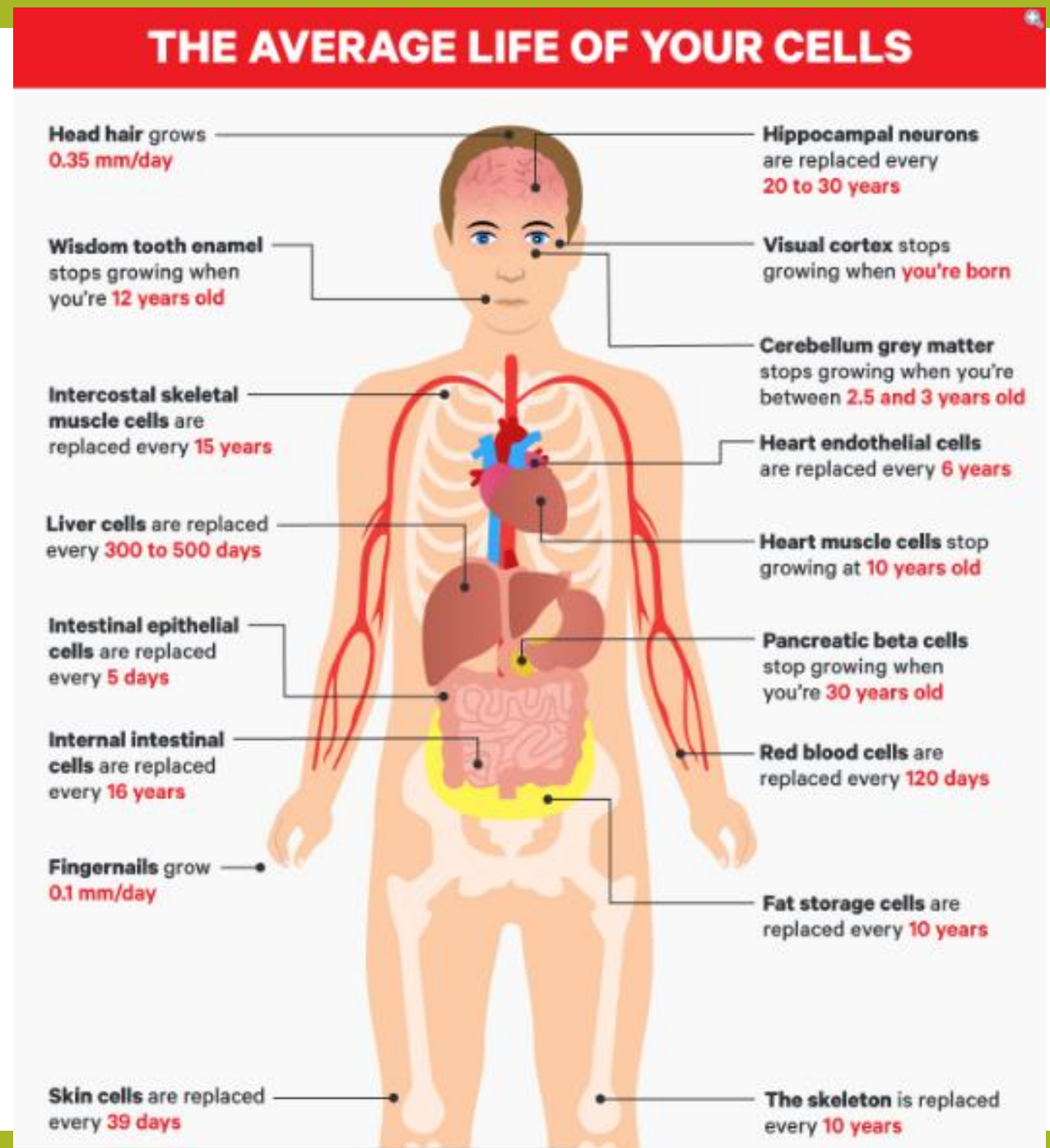


# Growth, Repair and Reproduction





- New Body Every 7 Years?
- What do you think?



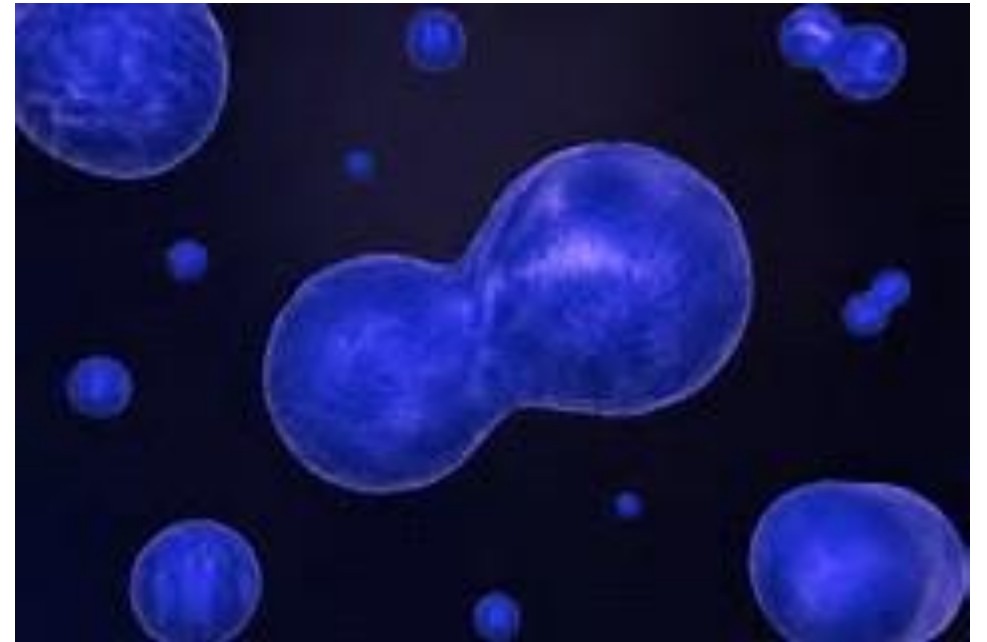
# What does it mean to be living?

- Living organisms:
  - Made up of cells
  - Reproduce
  - Have a universal genetic code
  - Grow and develop
  - Obtain and use materials and energy
  - Respond to environment
  - Change over time



# What do you remember about cells from last year?

- In groups of 3 try complete the following:
  - Identify as many organelles as possible.
  - What is the cell theory?
  - How do prokaryote cells differ from eukaryote cells?





# The Animal Cell

Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Block: \_\_\_\_\_

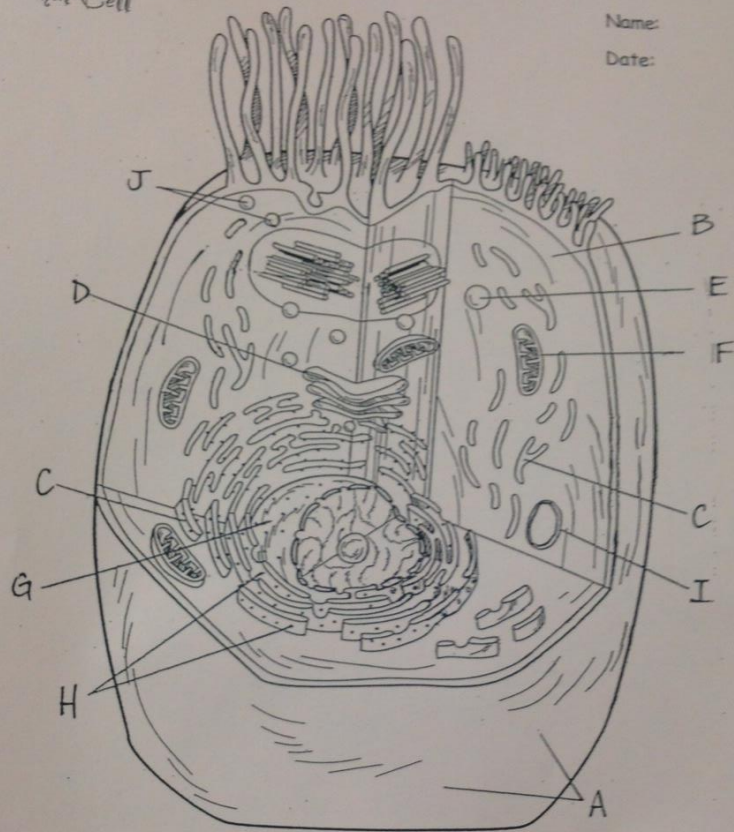


Diagram from "The Princeton Review Biology Coloring Workbook" (modified)

- |  |  |                                  |
|--|--|----------------------------------|
| A. Cell Membrane <input type="radio"/>         | E. Lysosome <input type="radio"/>      | I. Vacuole <input type="radio"/> |
| B. Cytoplasm <input type="radio"/>             | F. Mitochondrion <input type="radio"/> | J. Vesicle <input type="radio"/> |
| C. Endoplasmic Reticulum <input type="radio"/> | G. Nucleus <input type="radio"/>       |                                  |
| D. Golgi Body <input type="radio"/>            | H. Ribosomes <input type="radio"/>     |                                  |

# The Plant Cell

Name: \_\_\_\_\_  
Date: \_\_\_\_\_ Block: \_\_\_\_\_

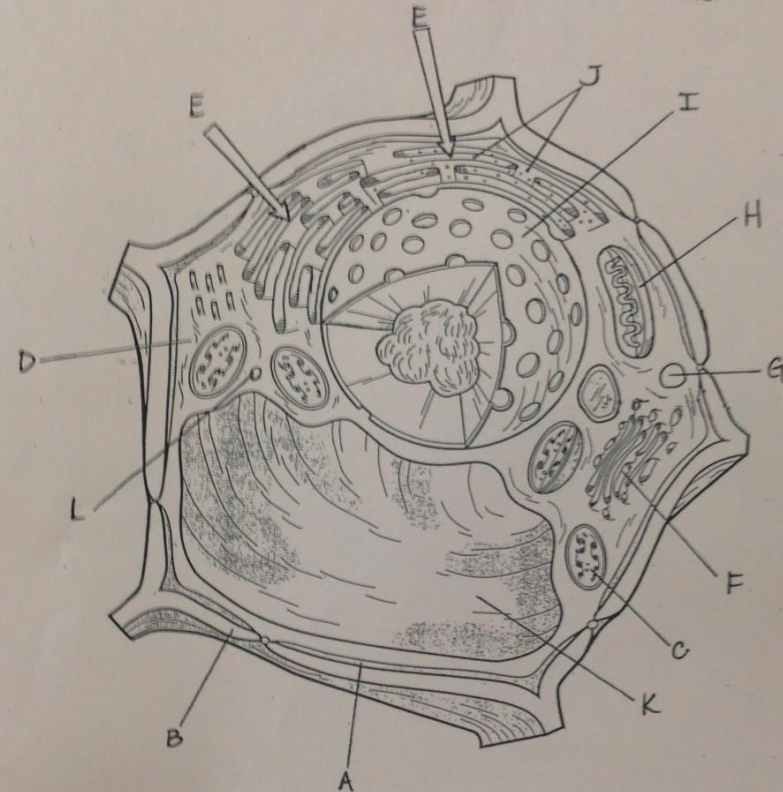


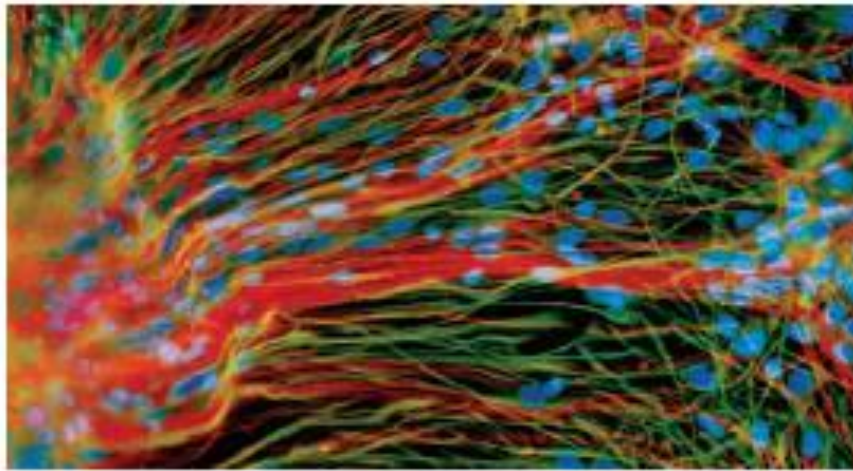
Diagram from "The Princeton Review Biology Coloring Workbook" (modified)

- |  |  |                                    |
|--|--|------------------------------------|
| A. Cell Membrane <input type="radio"/> | E. Endoplasmic Reticulum <input type="radio"/> | I. Nucleus <input type="radio"/>   |
| B. Cell Wall <input type="radio"/>     | F. Golgi Body <input type="radio"/>            | J. Ribosomes <input type="radio"/> |
| C. Chloroplast <input type="radio"/>   | G. Lysosome <input type="radio"/>              | K. Vacuole <input type="radio"/>   |
| D. Cytoplasm <input type="radio"/>     | H. Mitochondrion <input type="radio"/>         | L. Vesicle <input type="radio"/>   |



# Cell Theory

- The cell is the basic unit of life.
- All organisms are composed of one or more cells.
- All cells come from other living cells.



Embryonic stem cells that are developing into nerve cells

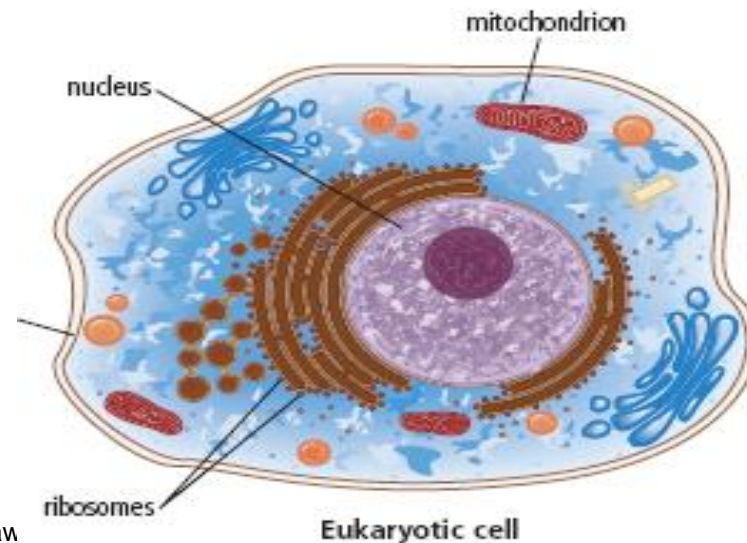
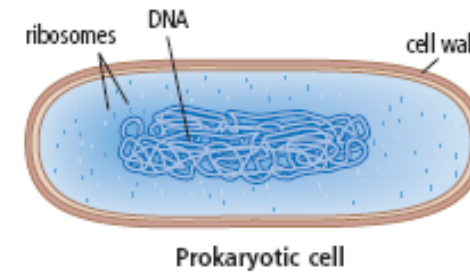
# Prokaryotic and Eukaryotic Cells

Cells are classified into two groups:

**Prokaryotic cells have organelles that are not surrounded by membranes.**

**Eukaryotic cells have organelles that are surrounded by membranes.**

**Eukaryotic cells are usually larger than prokaryotic cells.**



# Question....

- If we all started out as a single cell, what happened to that cell? How did you become the person you are today?
- What do you think would happen if your body could no longer make cells?



Search ID: aman380  
When you say you're a single-celled organism,  
what do you mean by 'single'?



# Reproduction and Sustainability

- **Sustainability** refers to the ability of the environment and the living things it supports to **endure (remain in existence)** into the future.
  - Imagine that all living things on earth are no longer able to reproduce-ie to make more of their own kind
    - What would happen???



- **Reproduction** ensures that organisms have a source of **nutrients** and **energy** to sustain their life processes.

# BC Salmon

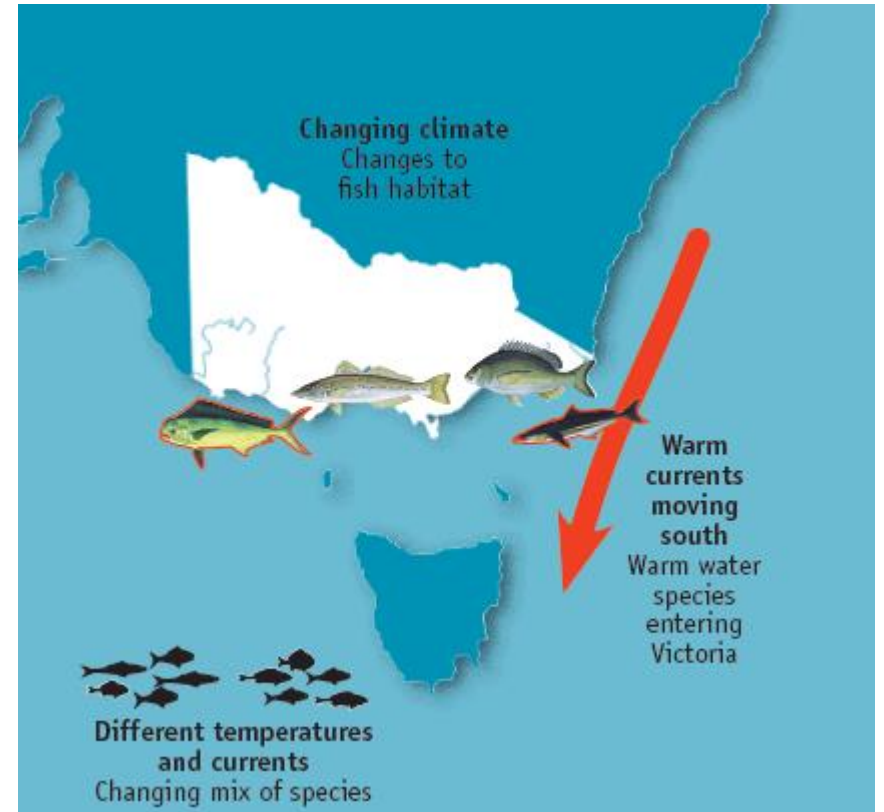
- BC salmon are keystone species of BC's ecosystems. They play a large role in many food chains as well as they distribute nutrients throughout the ecosystem as they travel upstream.
  - What might threaten the sustainability of BC's wild salmon population?



- Discuss with your row and decide on **3 main threats** to sustainability.

# 3 Main Threats

- Overfishing (removing too many salmon)
- Climate change (water temperature rising)
- Fish farms (diseases)

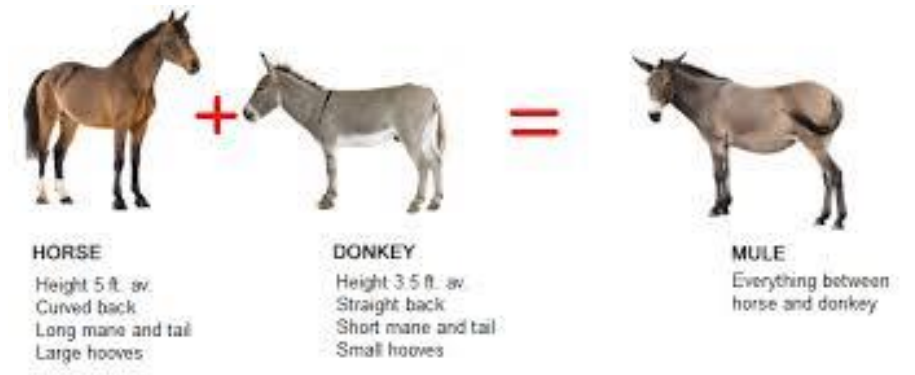




# Reproduction and Continuity

## Continuity

- Biologists use this word to talk about how each species of organism continues to **exist** over time, from one **generation** to another.
- Species are a group of related organisms that can reproduce together to produce FERTILE offspring.
- Individual organisms grow, develop and die, However, a species continues to exist into the future **ONLY** if its members **reproduce**



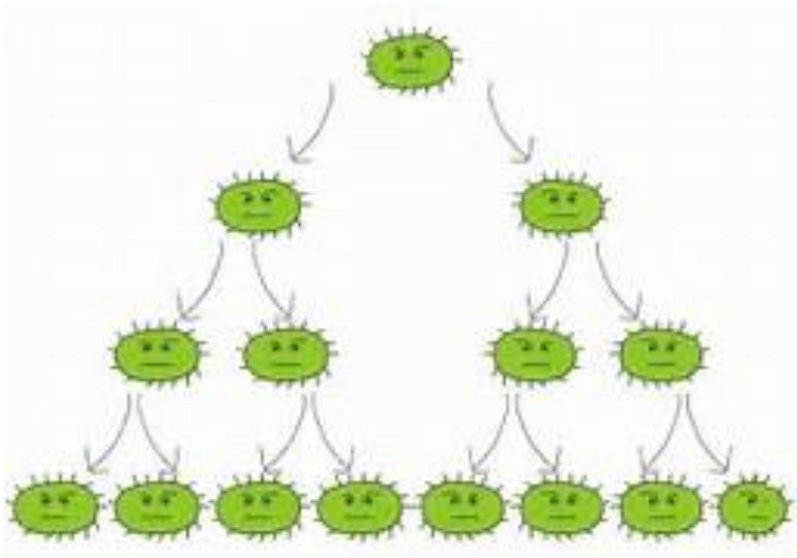
# Reproduction ensures that life exists beyond its present generation

- All the life you see around you, all the life in the world, all the life that provides you and other living things with food that supplies you with energy and nutrients to grow, develop and live depends on the ability of cells to reproduce.

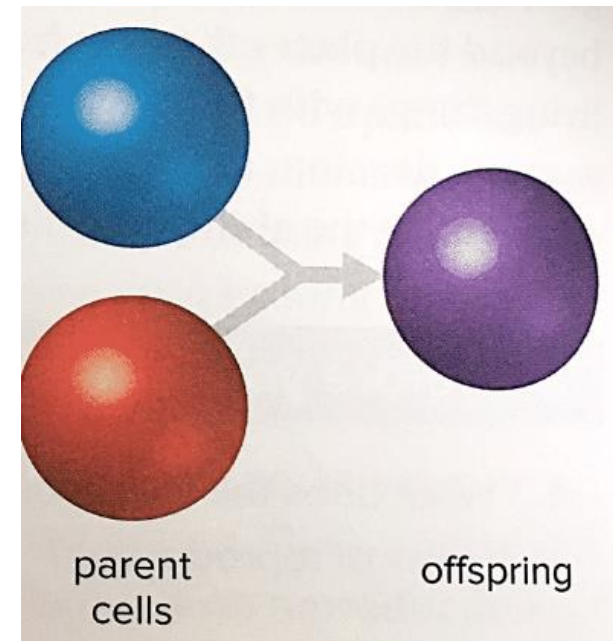


# Two types of Reproduction

- Asexual Reproduction



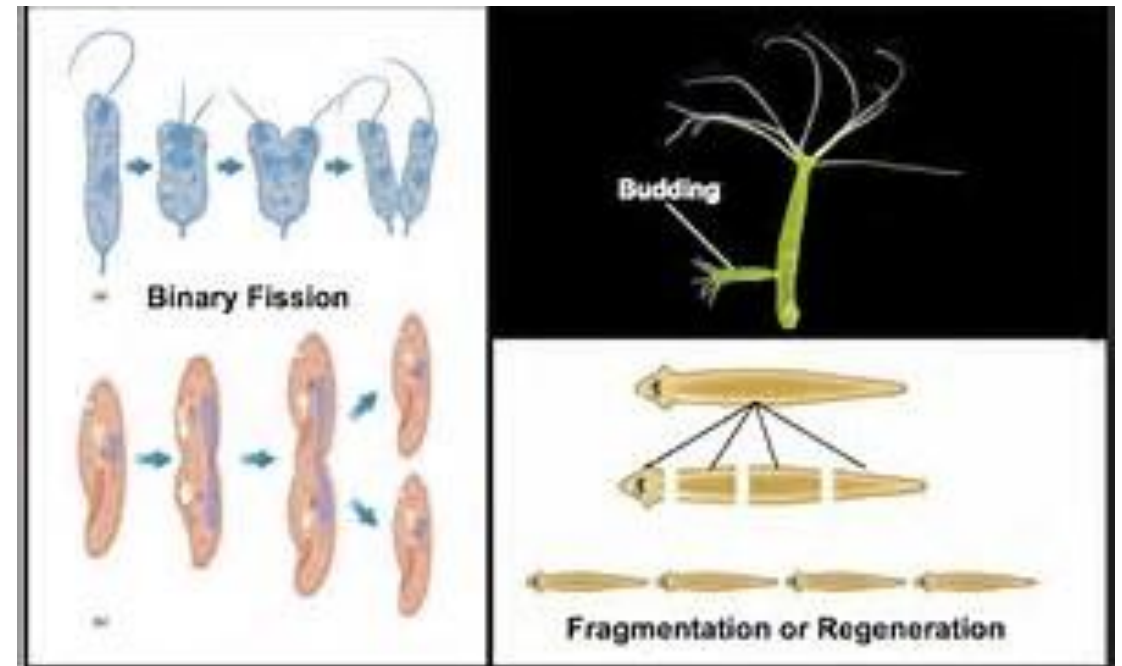
- Sexual Reproduction





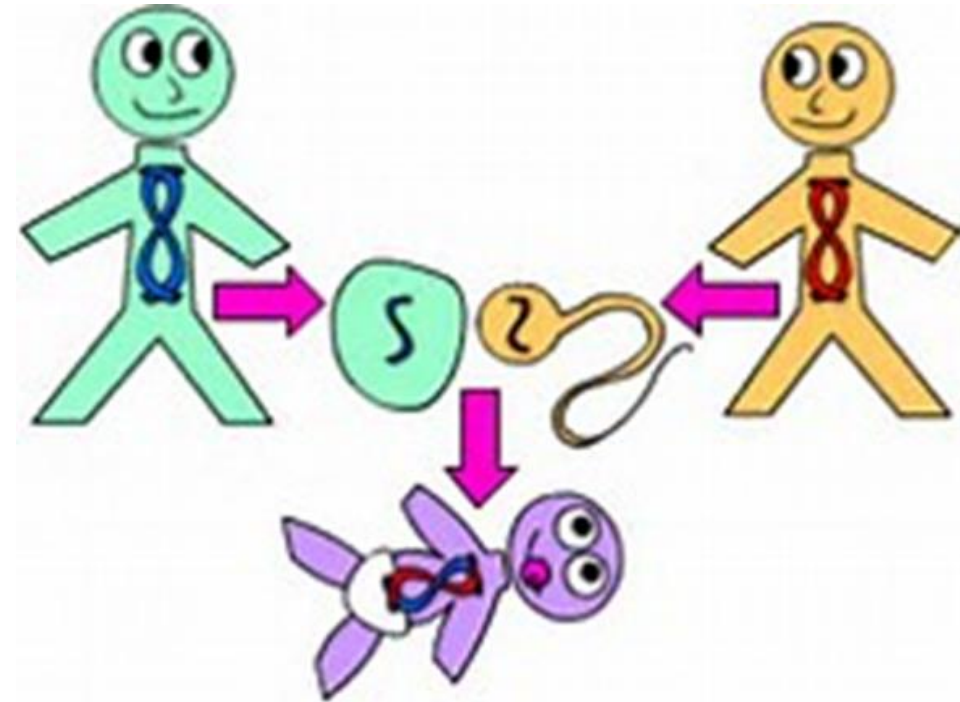
# Asexual Reproduction

- Offspring come from a single parent
- Offspring are genetically identical to parent
- Fast reproduction
- Lots of offspring
- Different types of asexual reproduction



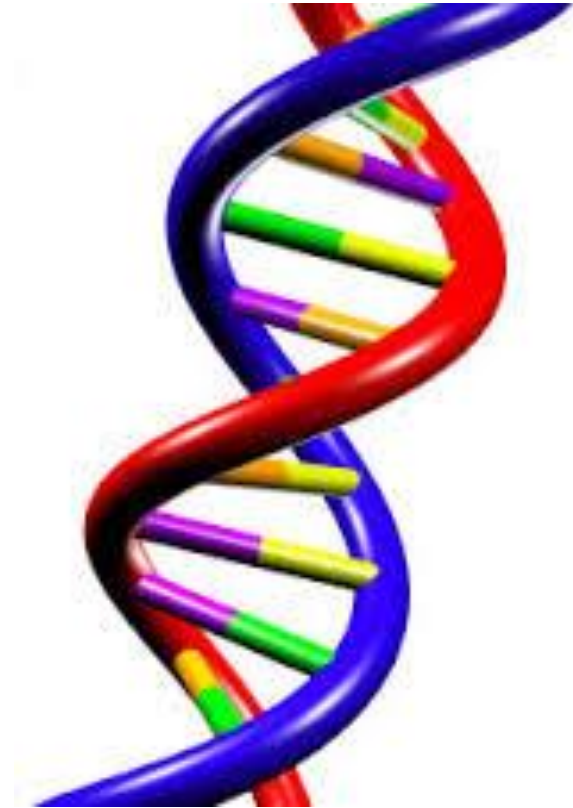
# Sexual Reproduction

- Involves two parents
- Each parent contributes half of the offspring's genetic information
- Offspring have genetic information that is different than parents
- Less offspring
- Genetic diversity
- Slow reproduction



# Genetic Material

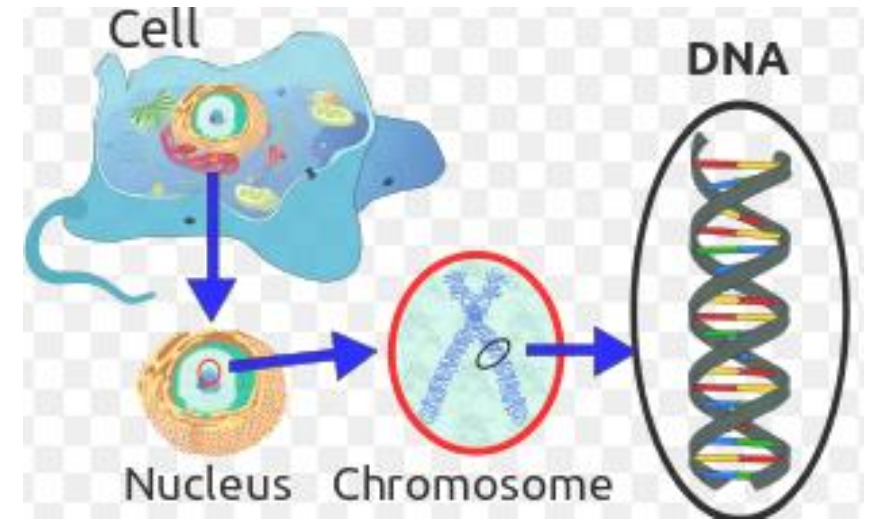
- An organisms genetic material determines how it looks, how it functions and in many cases how it behaves.
- Genetic material carries these instruction in a molecule known as DNA
  - DNA is short for deoxyribonucleic acid.
- No matter how an organism reproduces, it all begins with the transfer of genetic information and the reproduction of a cell.





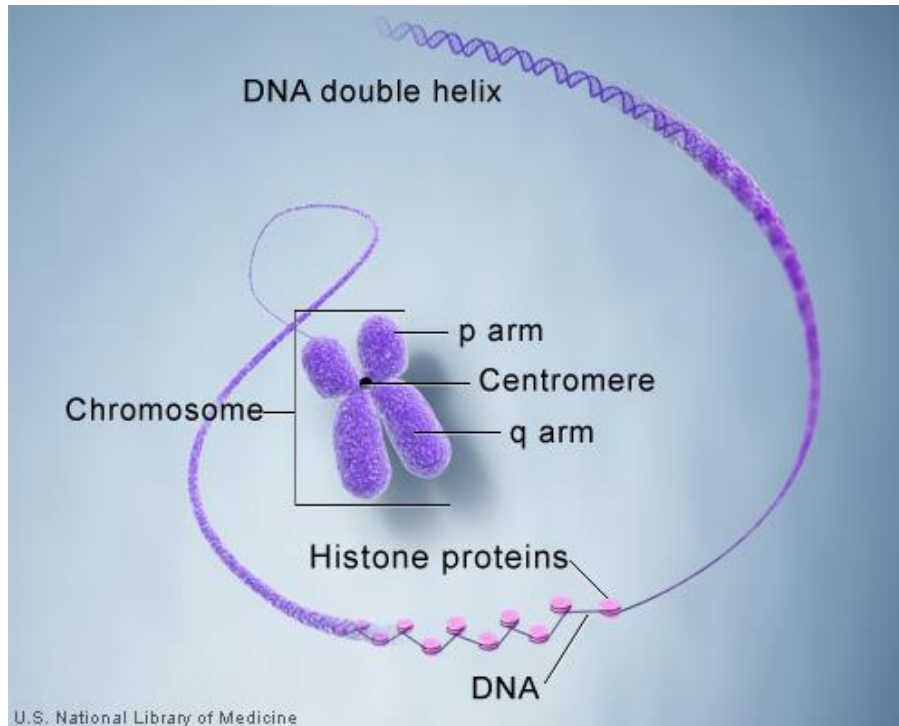
# Nucleus

- Contains cell's genetic info (DNA) – controls cell functions
- Within the nucleus DNA molecules coil and compact into a condensed form called chromatin
- When a cell is ready to reproduce, DNA condenses further into structures called chromosomes.
- Chromosomes are copied and transferred to the new cell



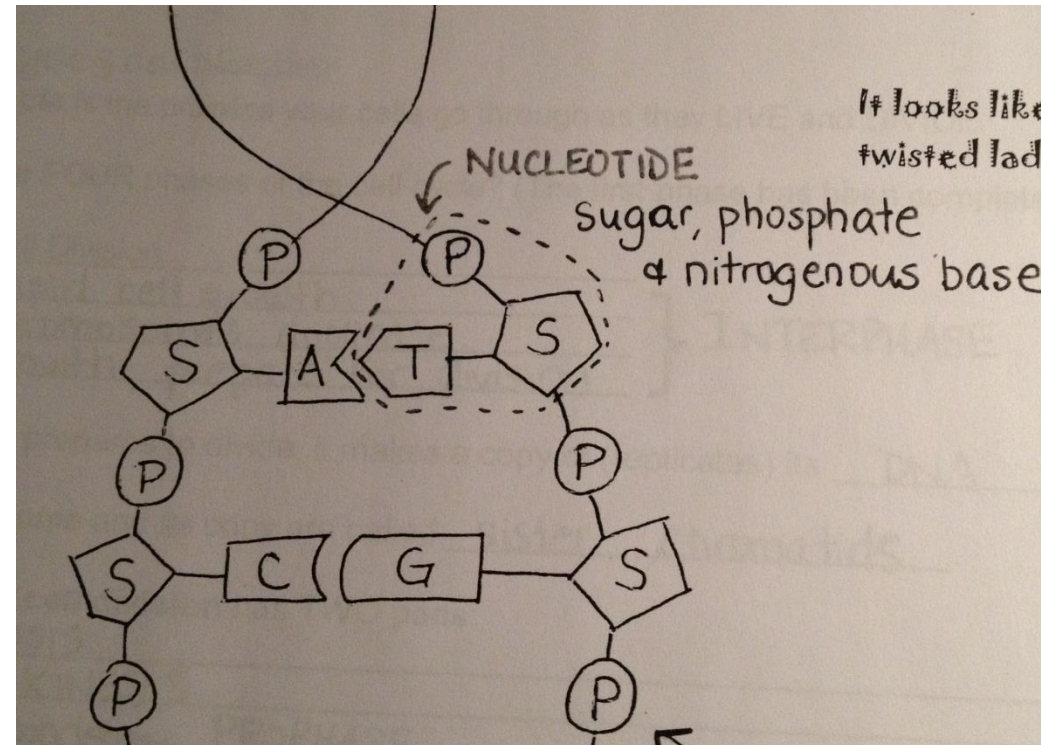
# DNA Structure

- **DOUBLE HELIX:** Like a twisted ladder



# DNA

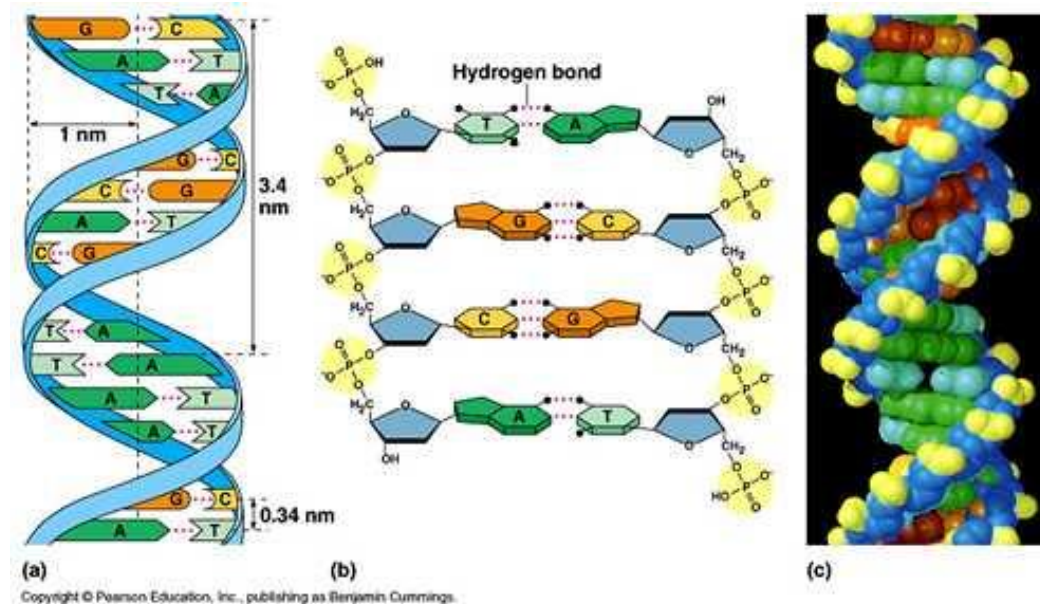
- DNA molecule is made up of two **NUCLEOTIDES**
- **Nucleotides** are made up of a sugar, phosphate & nitrogenous base



# Nitrogenous Bases

- There are FOUR different bases:

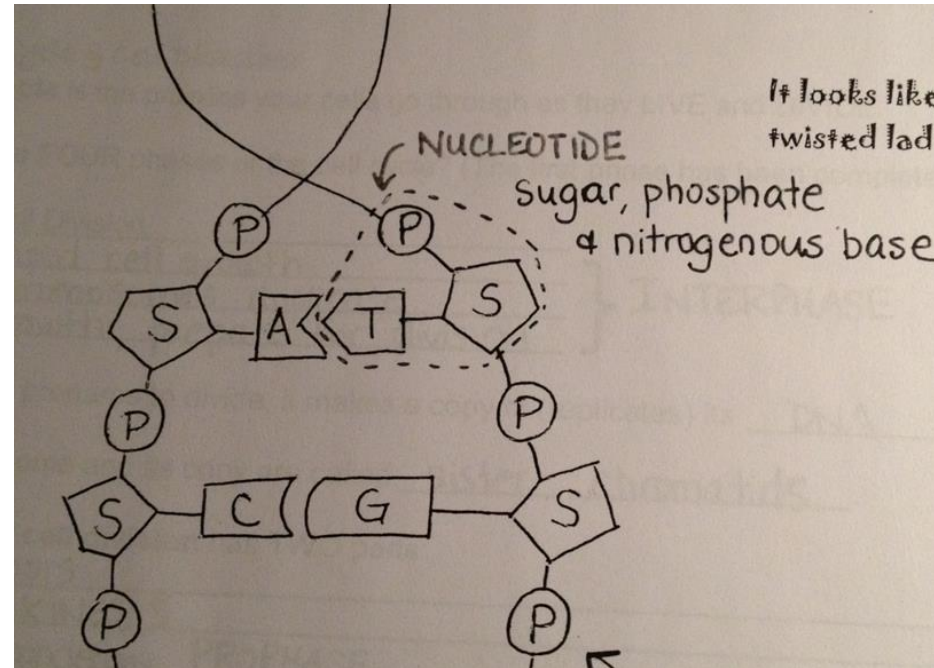
1. Adenine (A)
2. Guanine (G)
3. Cytosine (C)
4. Thymine (T)



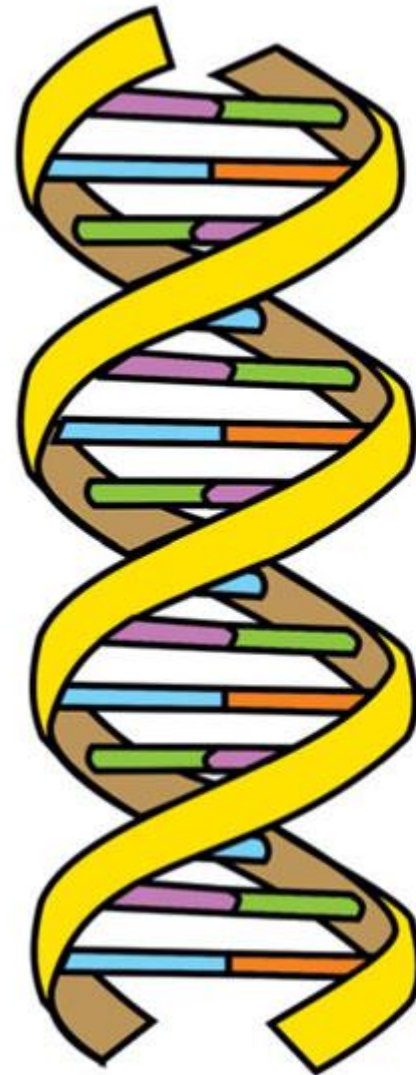


# THE BASES - ALWAYS pair together like this

- Adenine → Thymine
- Cytosine → Guanine
- *THIS IS CALLED  
COMPLEMENTARY BASE  
PAIRING*



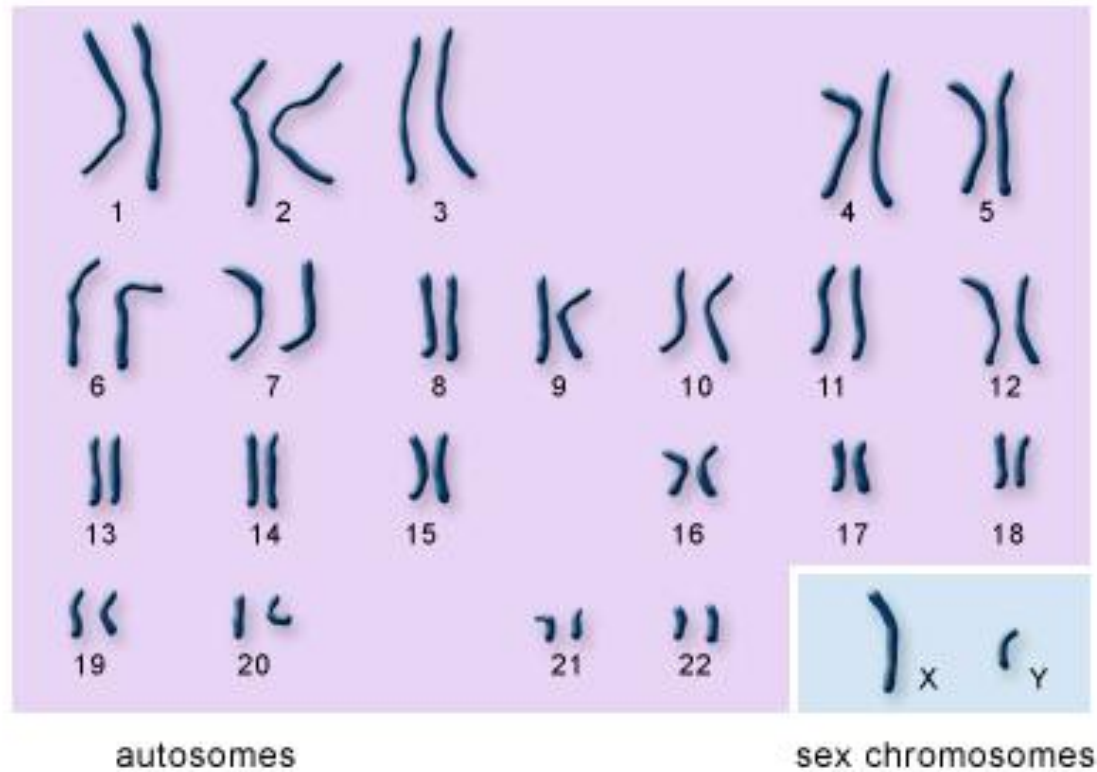
# DNA CUT AND PASTE



- Adenine
- Thymine
- Cytosine
- Guanine
- Sugar-phosphate backbone

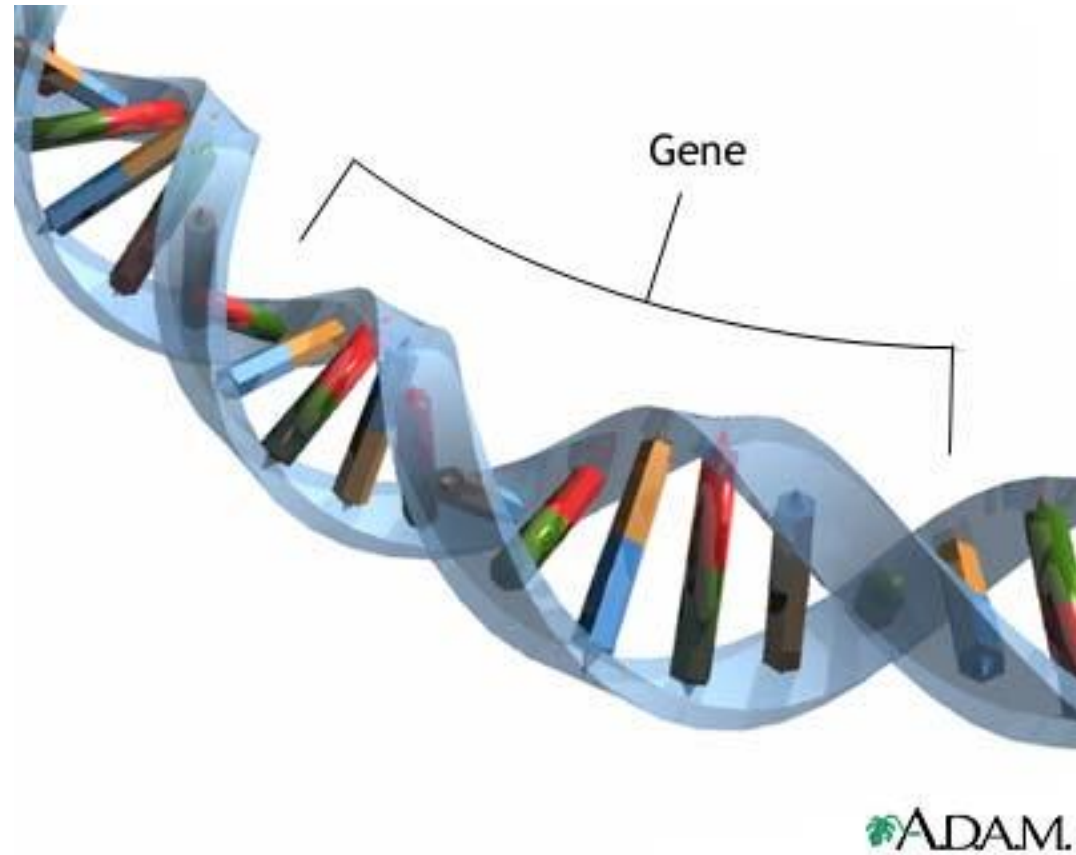
# Genome

- All of an organisms genes



# Gene

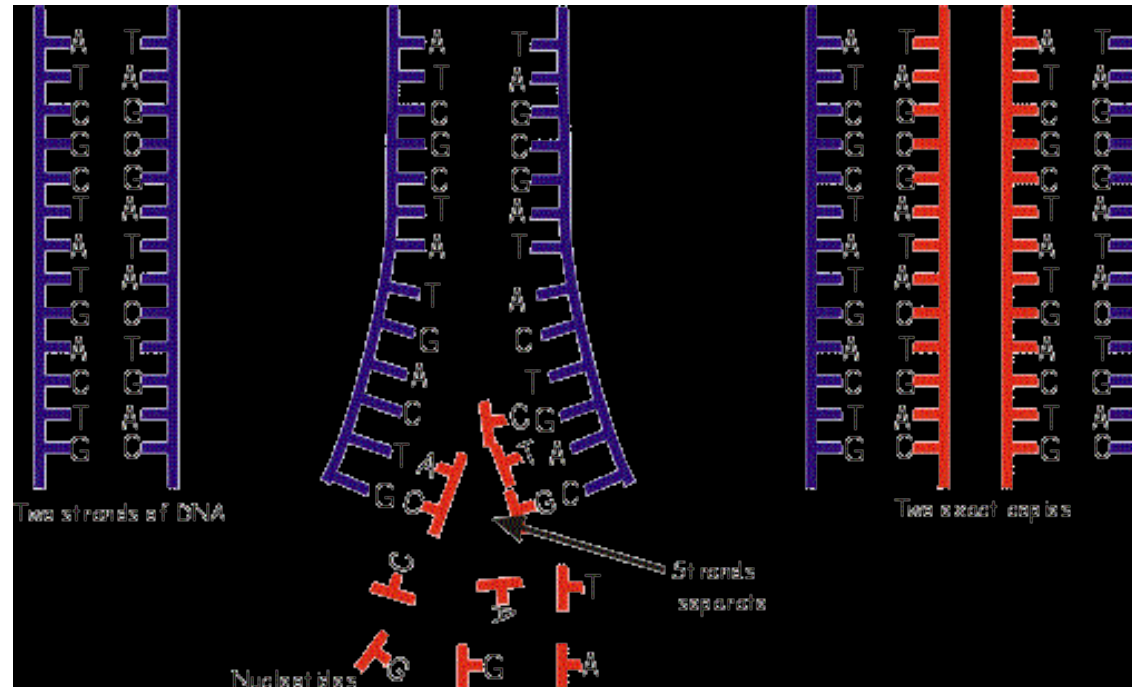
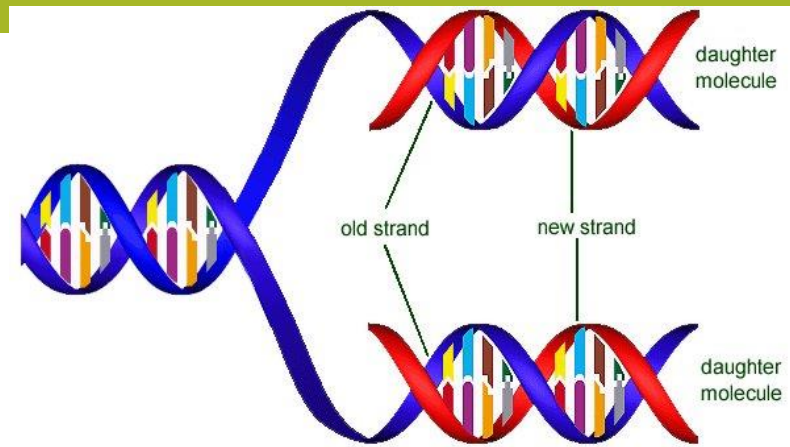
- Short section of DNA that “codes” for a specific protein (instructions for making it)





# DNA Replication

- DNA molecule opens up
- New bases join opened sides
- Each strand has one parent strand and one new daughter strand
- 1 original strand, 2 when finished.



Let's look at some DNA!

