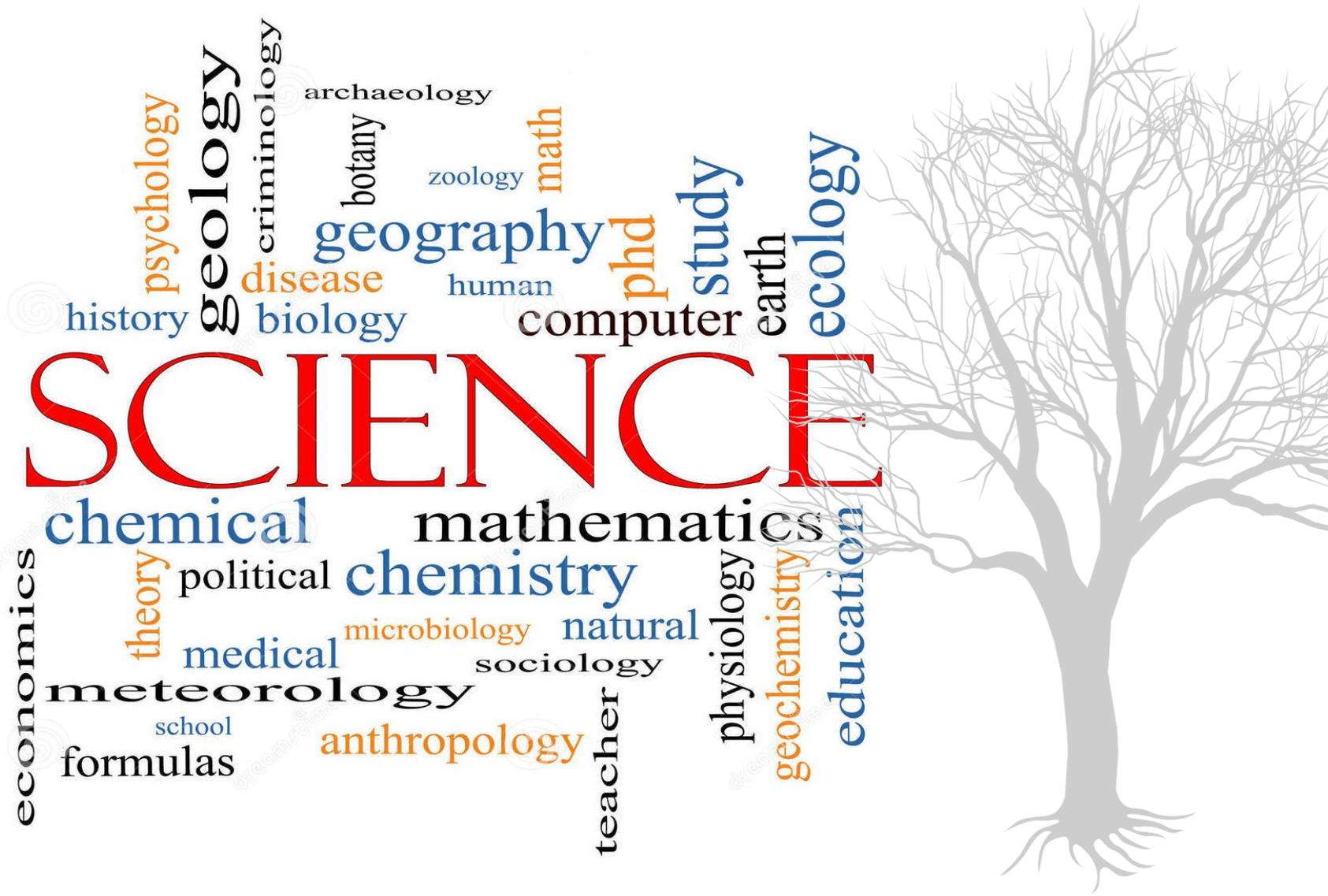




# What is Science?





- from Latin *scientia*, meaning "knowledge"



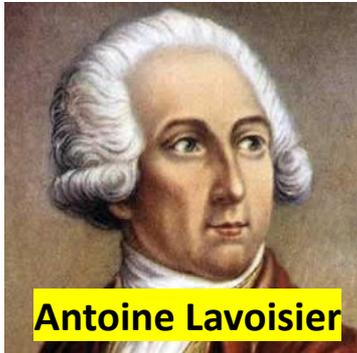
Louis Pasteur



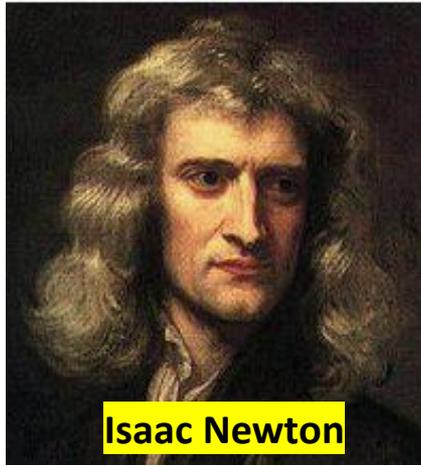
Antonie van Leeuwenhoek



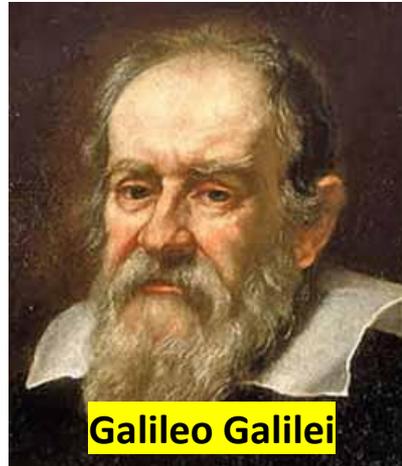
Benjamin Franklin



Antoine Lavoisier



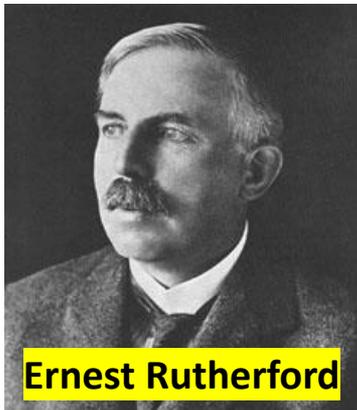
Isaac Newton



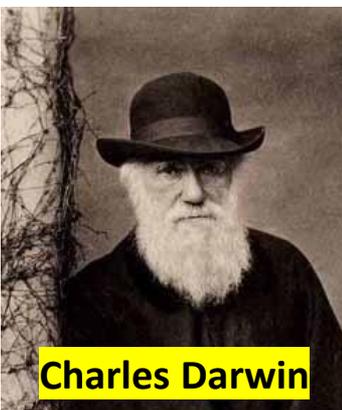
Galileo Galilei



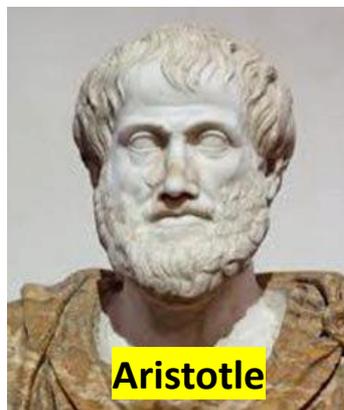
Pierre and Marie Curie



Ernest Rutherford



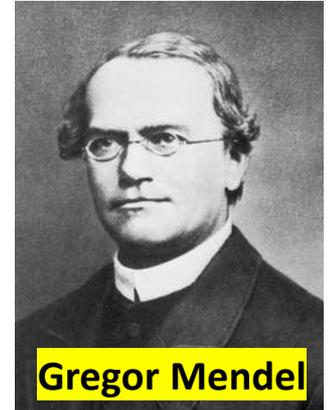
Charles Darwin



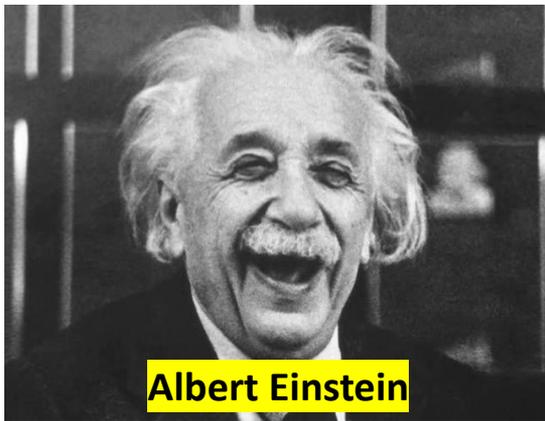
Aristotle



Dmitri Mendeleev



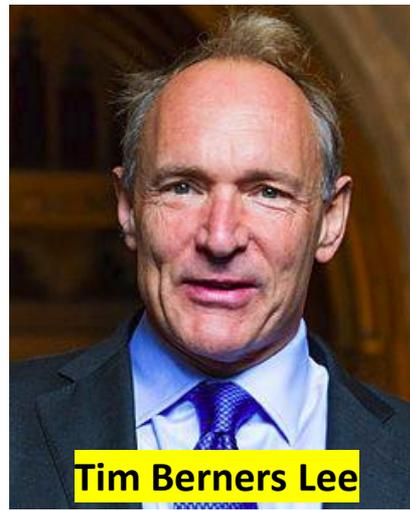
Gregor Mendel



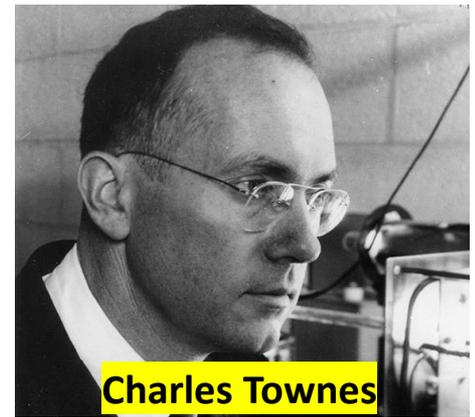
**Albert Einstein**



**Tu Youyou**



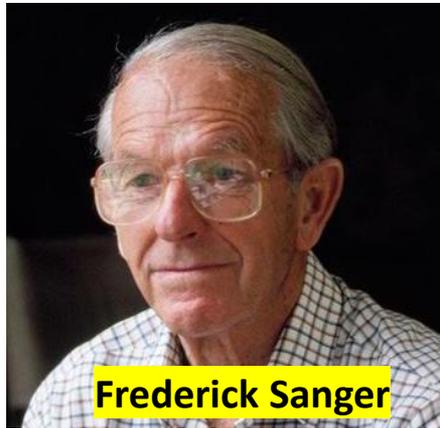
**Tim Berners Lee**



**Charles Townes**



**Alexander Fleming**



**Frederick Sanger**

**Your  
picture  
here?**



**Jane  
Goodall**



**Venkatraman  
Ramakrishnan**



**Emmanuelle Charpentier and Jennifer Doudna**



**Stephen Hawking**

# Our Topics

life spectrum  
matter observation  
light cell  
data atom DNA  
plasma virus color time  
measurement molecule  
bacteria

# What is Science?

Science is an **organized** way of **attempting to understand the natural world**, both structurally and operationally.

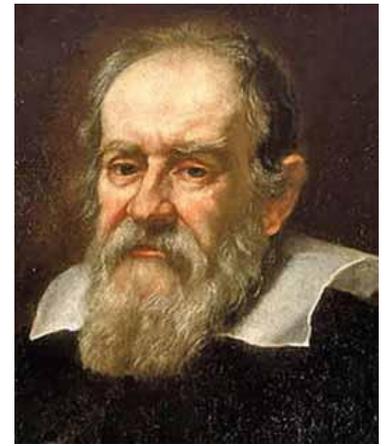
- a *way of knowing*
- a *process* of study of natural world
- involves observing, proposing explanations, and testing explanations
- is *evidence-based*





# Equality of falling objects

## Galileo Galilei, early 1600s



- **Common wisdom (Aristotle):**  
*heavier objects fall faster than lighter ones.*
- The story is now legendary: Galileo **dropped two different weights (balls)** from the top of the Leaning Tower of Pisa and **showed them landing at the same time.**
- **Result:** while *losing his job* as a mathematics professor at the University of Pisa for establishing a new fact, Galileo became famous throughout the continent...
- **Demonstration repeated:** Apollo 15 astronaut dropped a **feather** and a **hammer** on the **moon**, again demonstrating Galileo's equality of falling bodies. This was possibly the "most watched experiment" of all time!





# Foucault's Pendulum

Leon Foucault, 1851



- Demonstration showing that **the Earth revolves on its axis**.
- A 62-pound iron ball was suspended from 220 feet long steel wire attached to the dome of the Panthéon and set in motion. A marker extending from the ball barely touched a circle of damp sand underneath.
- **Common wisdom:** the pendulum will *trace the same places* over and over again.
- **In reality,** the **pendulum appeared to shift positions** leaving a slightly different trace with each swing.
- **The reason:** **the Earth** and therefore the floor **was rotating!**

