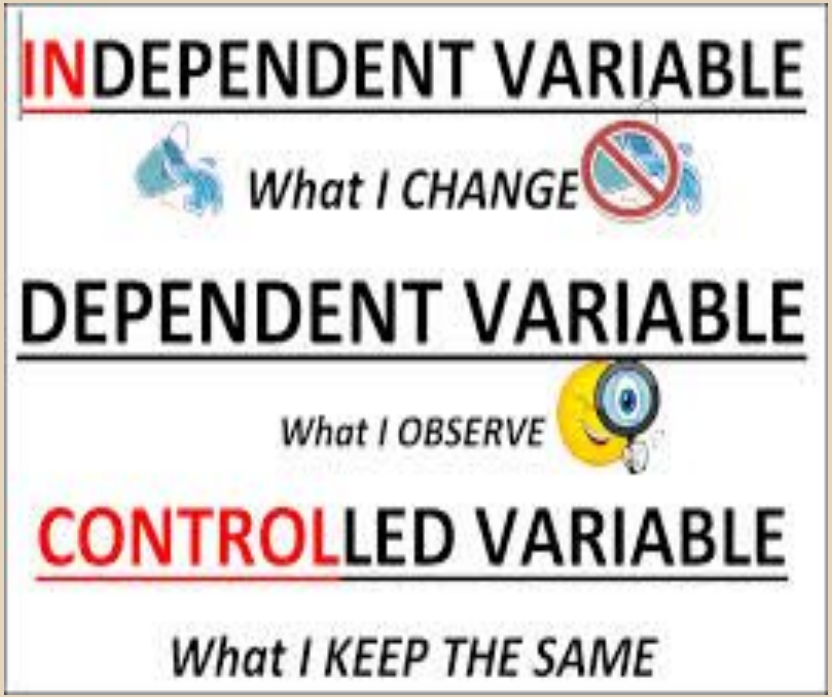
Scientific Method Flash Cards

Mr. Schultz

Independent Variable (Manipulated)

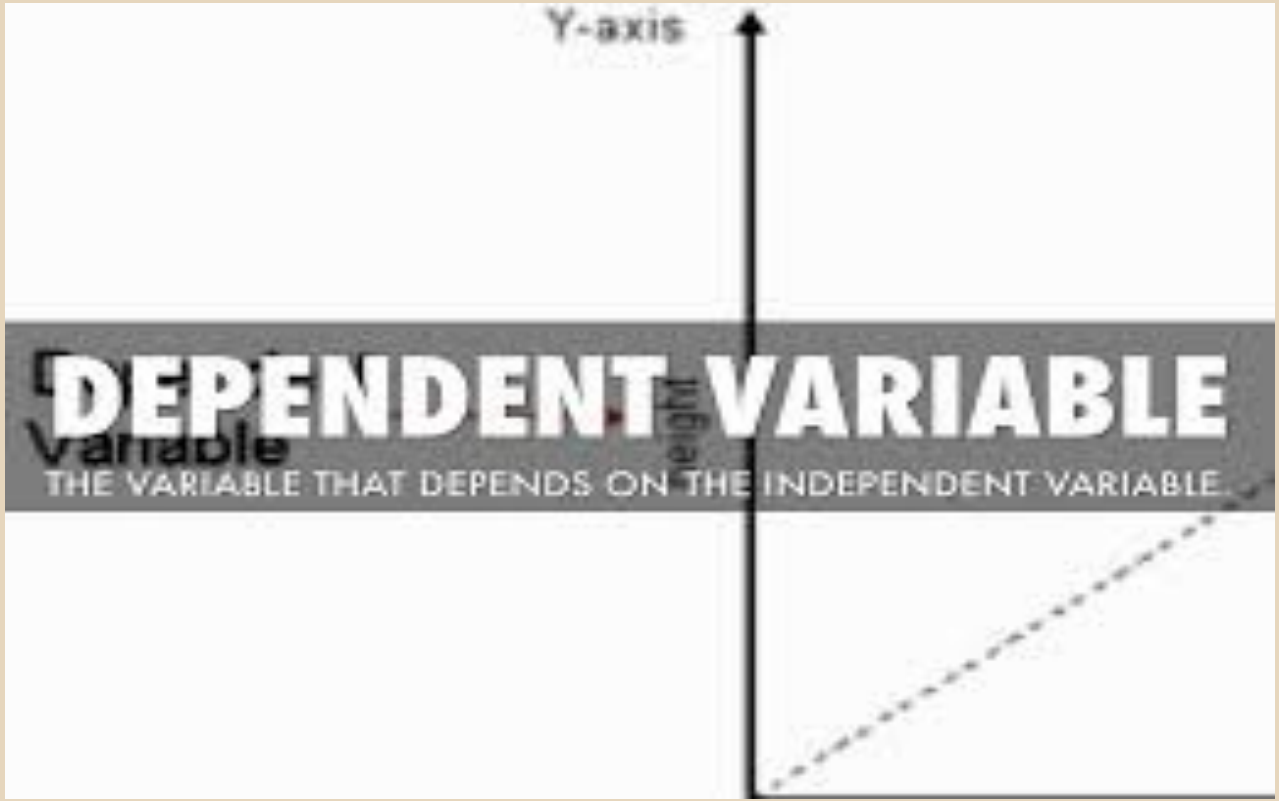
Independent Variable (Manipulated)



The one factor the person doing the experiment will change (the thing being tested)

*Only one thing should be changed at a time, otherwise the experiment will show inconsistent results

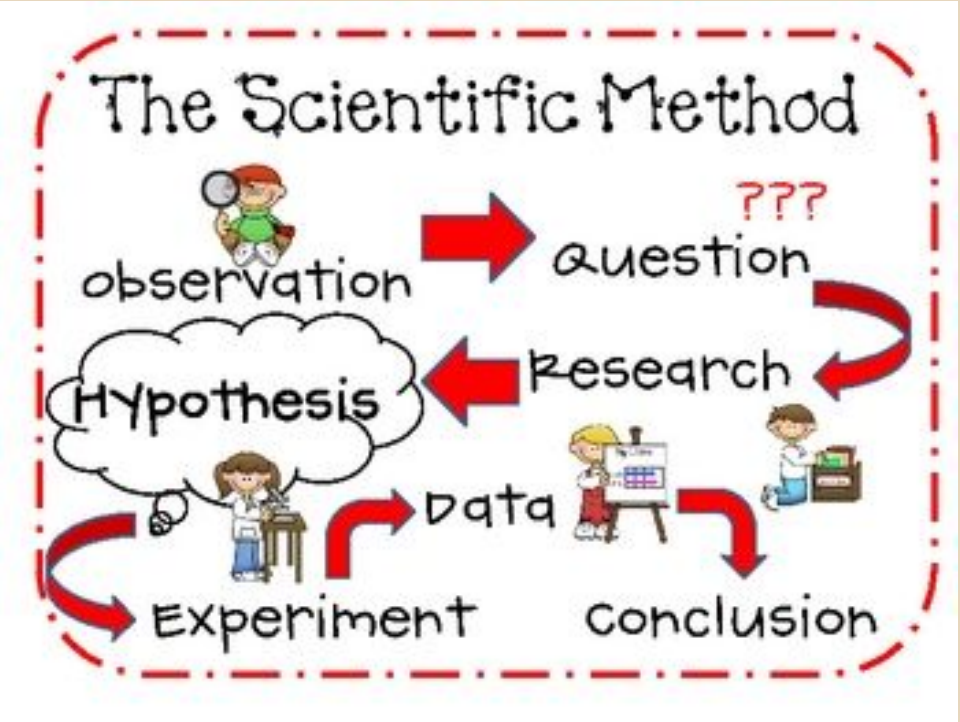
Dependent Variable (Responding)



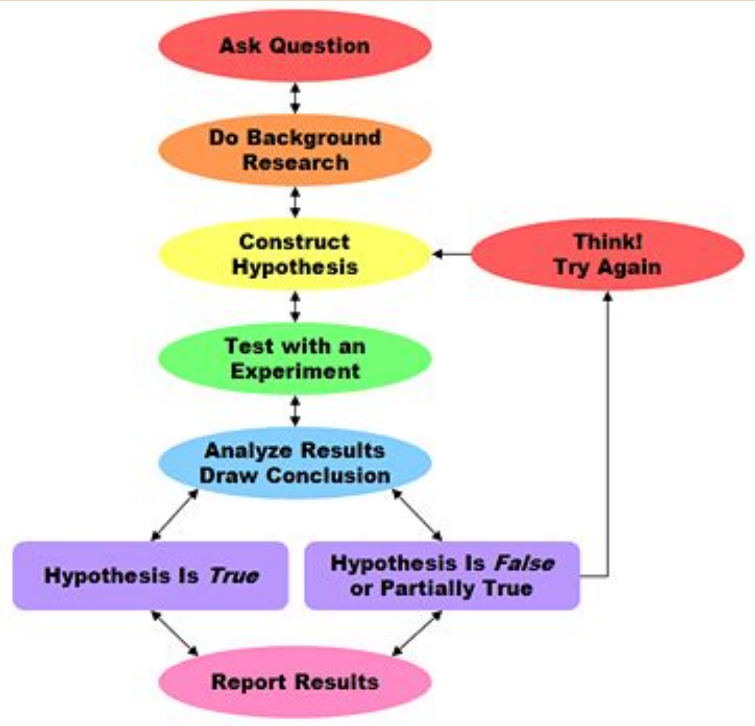
Dependent Variable (Responding)

What changes or is being measured due to the independent variable.

Scientific Method



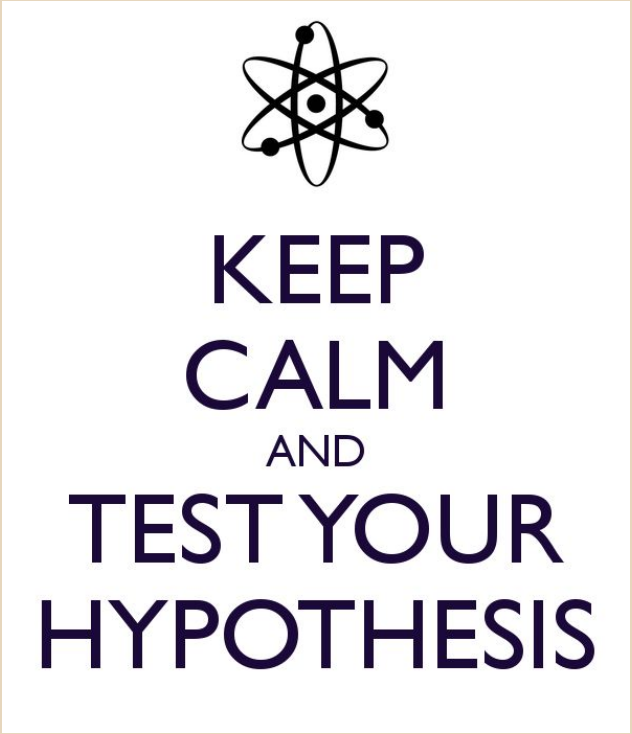
Scientific Method



A series of steps to investigate a problem.

Hypothesis

Hypothesis



Proposition explanation made based on limited evidence to be further tested (Pretty much an educated guess).

*“If/When…. (I do this), then….. (this happens)

Research

Research

Study and investigation for the purpose of learning new knowledge

*Any research is better than no research, make sure you cross reference. Don’t always believe the first thing you read.

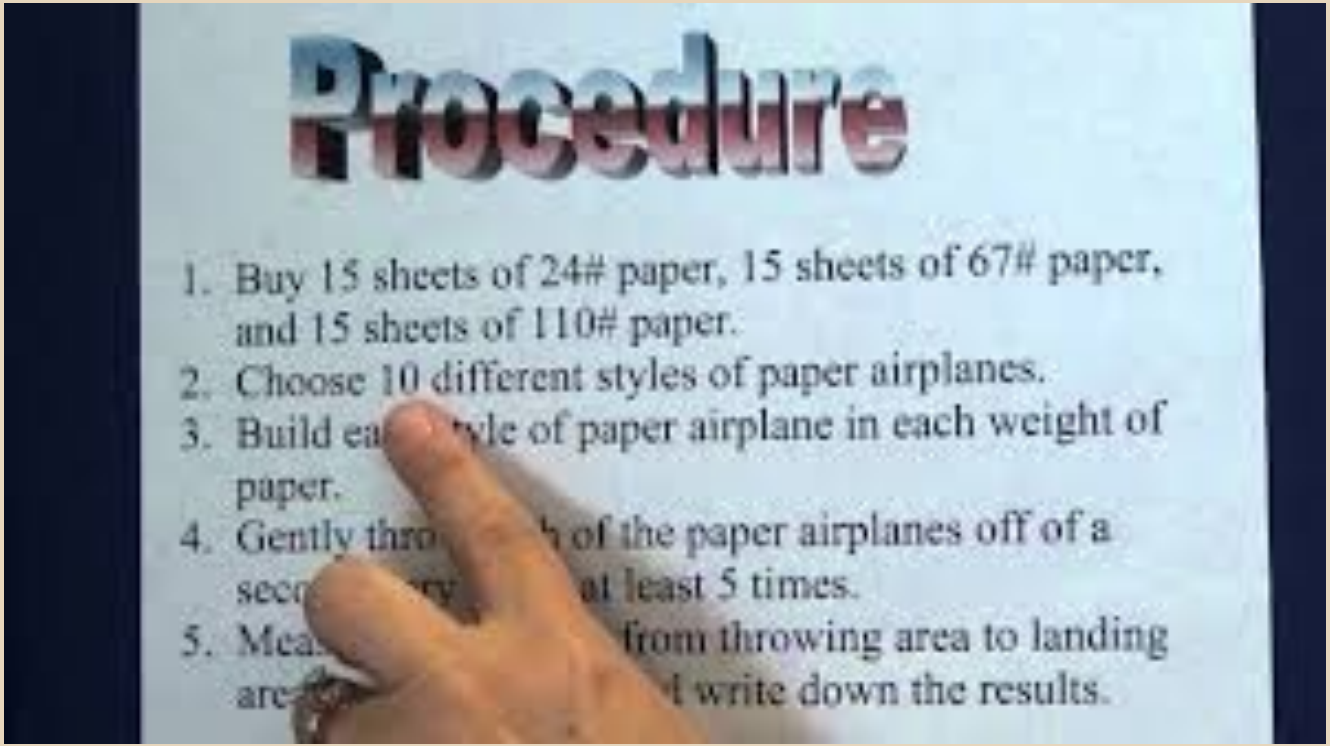
Materials

Materials

What you will use to conduct the experiment.

*Be specific here!!
*Use numbers (quantitative)

Procedures


Procedure
1. Buy 15 sheets of 24# paper, 15 sheets of 67# paper, and 15 sheets of 110# paper.
2. Choose 10 different styles of paper airplanes.
3. Build ea yle of paper airplane in each weight of paper.
4. Gently thro of the paper airplanes off of a sec at least 5 times.
5. Mea from throwing area to landing are write down the results.

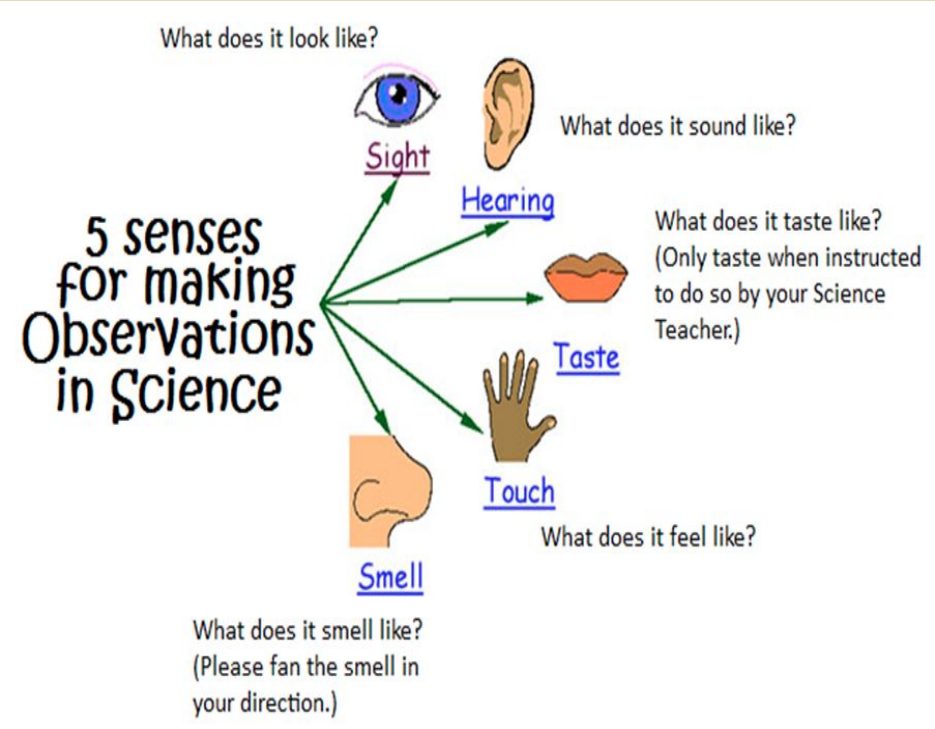
Procedures

A list of steps to carry out an experiment.

*It is very important to be precise here. Someone random that is handed your procedures should be able to carry out the experiment identical to you.

Observation

Observation



The things you see, feel, hear, touch, taste, smell or measure.

*Make <u>qualitative</u> and <u>quantitative</u> observations!!

Qualitative

Qualitative

Describing the “quality” of what is being observed.

*Always use adjectives (soft, green, crackles, etc.)

Quantitative

Quantitative

Observations that deal with numbers or measurements.

*Quantitative ---> Quantity

Data


data
science
research
scientists
support
faculty
environment
students
activities
fellows
sciences
program
institute
metrics
committee
social
across
scientific
methodology
budget
one
career
university
center
educational
physical
statistics
groups
made
areas
funding
annual
process
external
engineering
studio
described
breakthrough
methodologies
anticipate
tools
reproducibility
projects
alternative
open
use
see
space
working
also
researchers
collaborations
focused
area
additional
effort
include
community
per
group
administrative
seed
section
project
education
uw
bridge
incubator
domain
escience
activity
director
evaluation
graduate
established
establish
participants
campus
impact
year
time
including
training
participate
paths
software
number
development
professor
appendix
theme
computer
new
work
funded
programs
initiative
courses
postdocs
flagship
ethnography
steering
washington
grant
team
goal
fellow
fields
success
events
funds
libraries
environments
long-term
online
years
permanent
successful
positions
universities
methods
proposal
leaders
many
executive
range
culture
people
common
staff
collaboration
visiting
aligned
three
among
current
techniques
computing
practices
office
best
igert
assessed
well

Data

The information recorded during the experiment. Data can be numerical, or things we see, hear, feel, touch and smell.

*Always always record your data!!!

Conclusion

Conclusion

The results of an experiment based on observations and data collected.

*This is where you state if your hypothesis was correct or incorrect

Controlled Experiment

Controlled Experiment

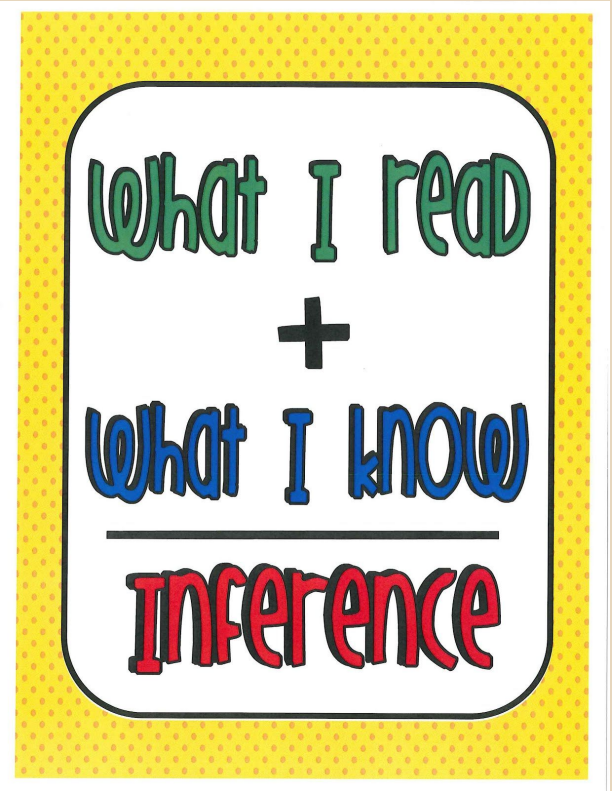
Figure 1.6 Redi's experiments refuting the spontaneous generation of maggots in meat. When meat is exposed in an open jar, flies lay their eggs on it, and the eggs hatch into maggots

An experiment that isolates the effect of one variable by keeping everything else the same.

*Controlled experiments are one way we can limit experimental errors.

Inference

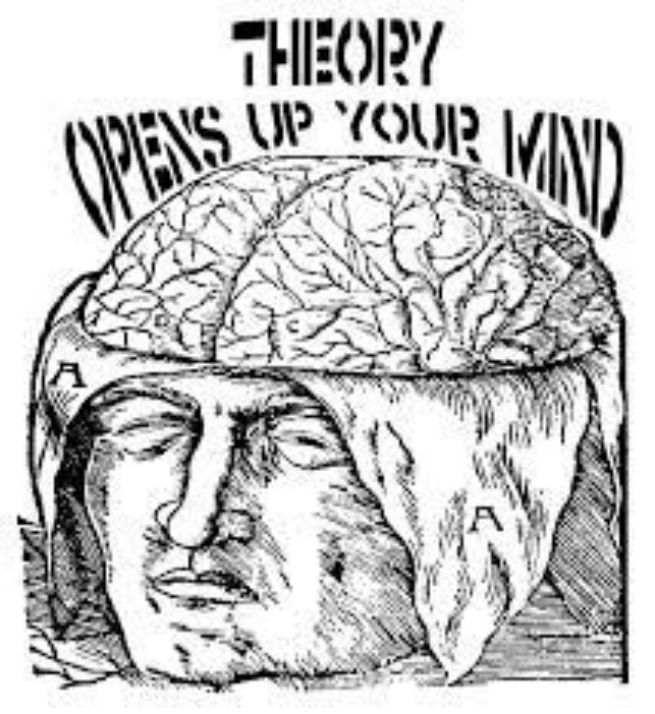
Inference



Logical explanation based on prior knowledge and experience.

Theory

Theory



A well supported hypothesis, which is the best existing explanation for a particular phenomenon.

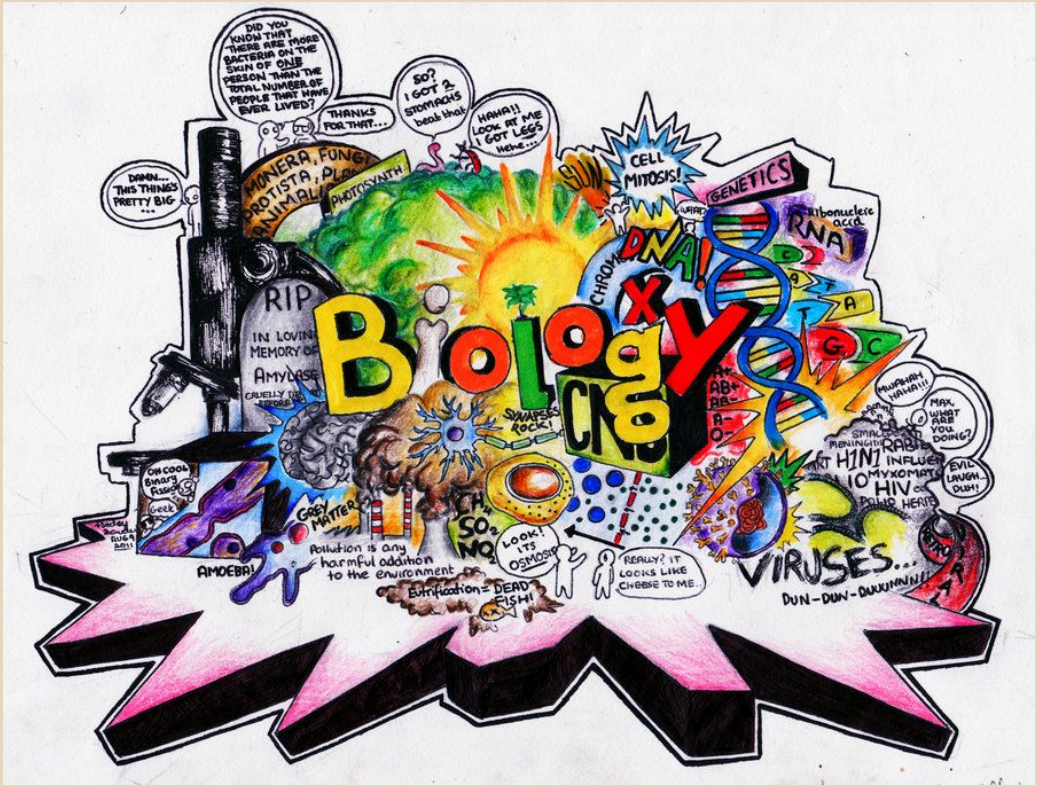
"I have ~~a theory~~ an opinion that iPhones are better than Droids."

Studying Life Flash Cards

Mr. Schultz

Biology

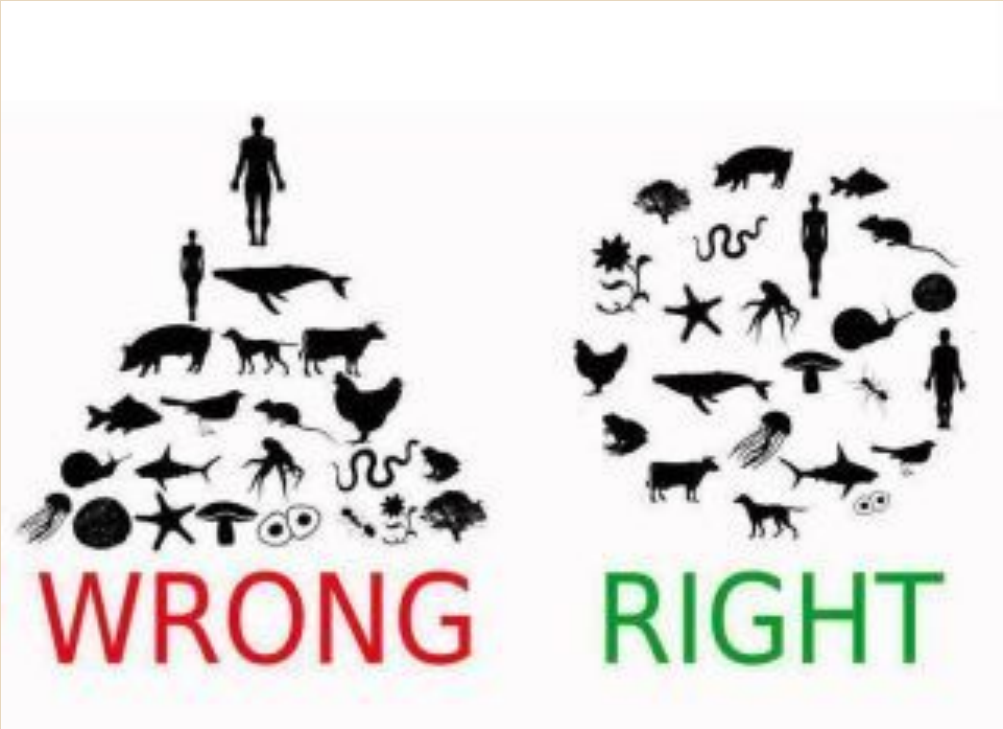
Biology



Bio (life) logy (study)

The study of life

Biodiversity



Biodiversity

Bio (life) diversity (variety)

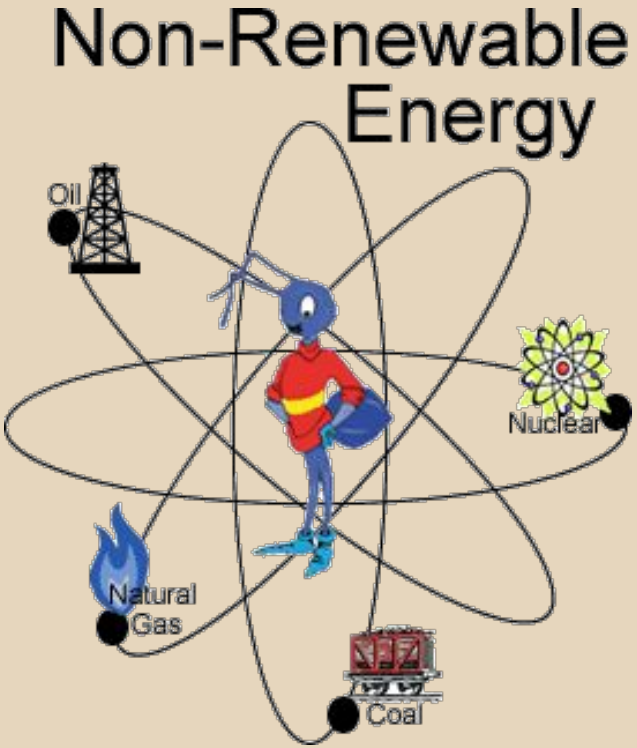
Total different types of organisms on Earth

*Humans are the biggest threat to biodiversity

Really good article → click here

Non-renewable resources

Non-renewable resources

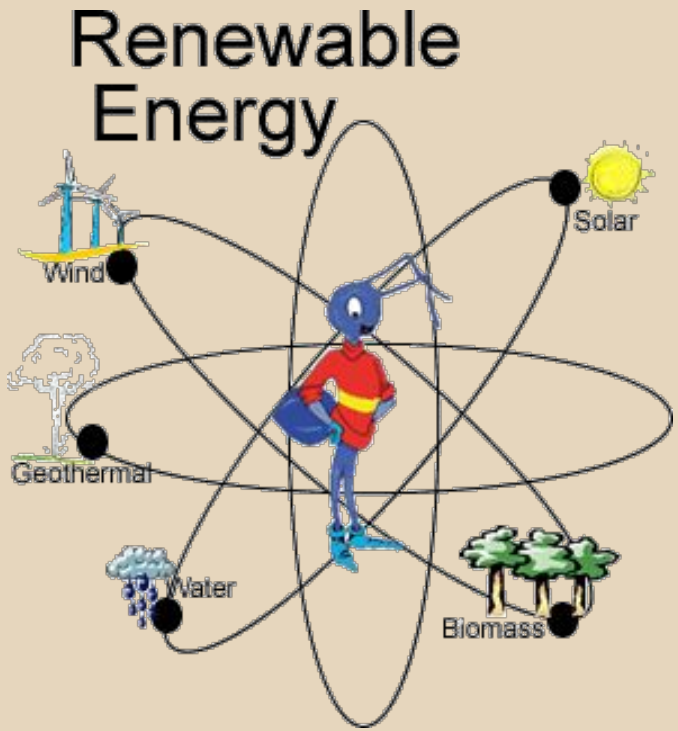


A resource that cannot be replenished by natural processes

Coal, Natural gas, Oil (petroleum), and Nuclear energy

Renewable resources

Renewable resources



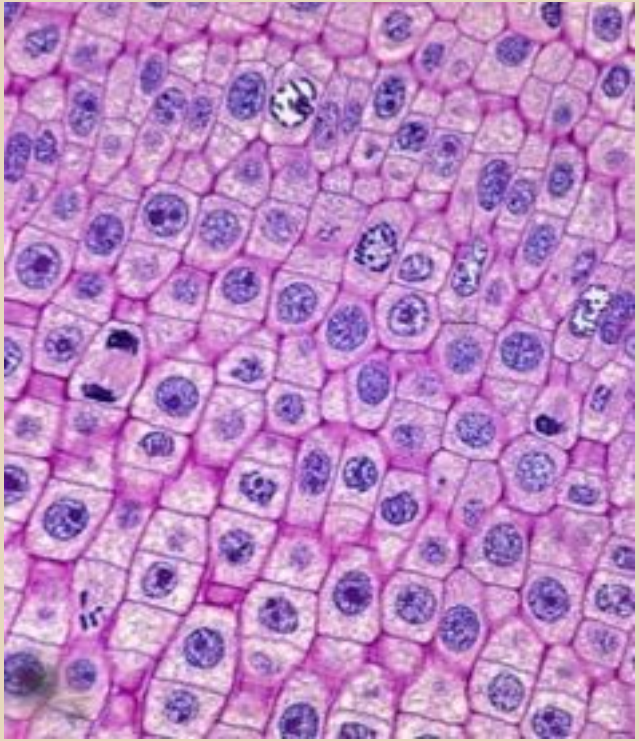
Resources that can be replaced naturally and we can use again

Here is a long list of renewable resources→ here

*This does not mean a resource is unlimited. If humans use a resource too much, it might run out before it replenishes (ex. fresh water- drought, overuse)

Cells

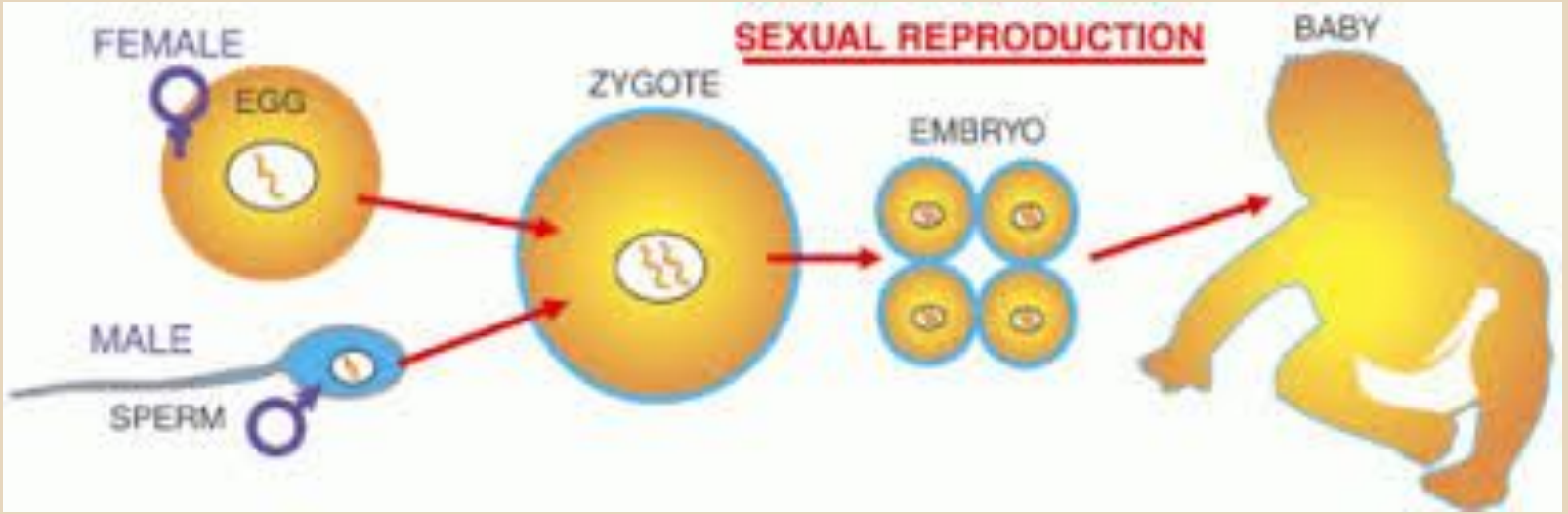
Cells



Collection of living matter inside a barrier that separates the cell from its surroundings

*There are many different types of cells. You have about 37 trillion!

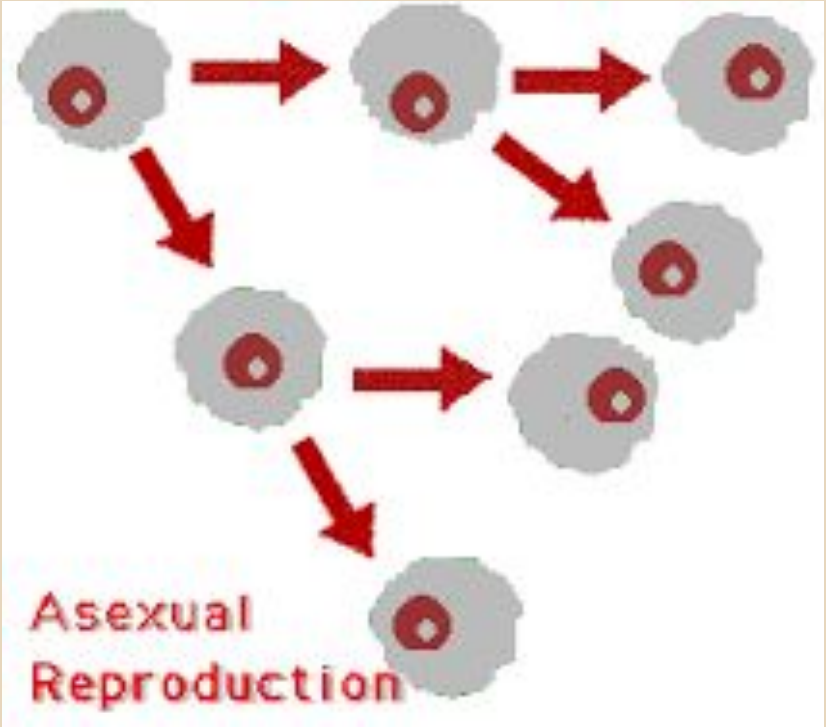
Sexual reproduction



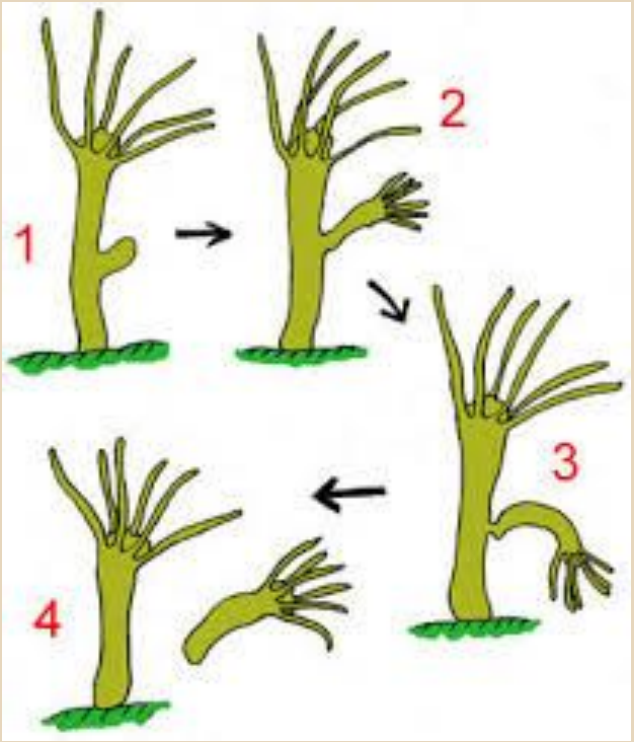
Sexual reproduction

When two cells from different parents unite to produce the first cell of a new organism

Asexual reproduction



Asexual reproduction



When a new organism comes from a single parent

A single celled organism splits in half

⟵ a portion of an organism splits off to form a new organism

Metabolism

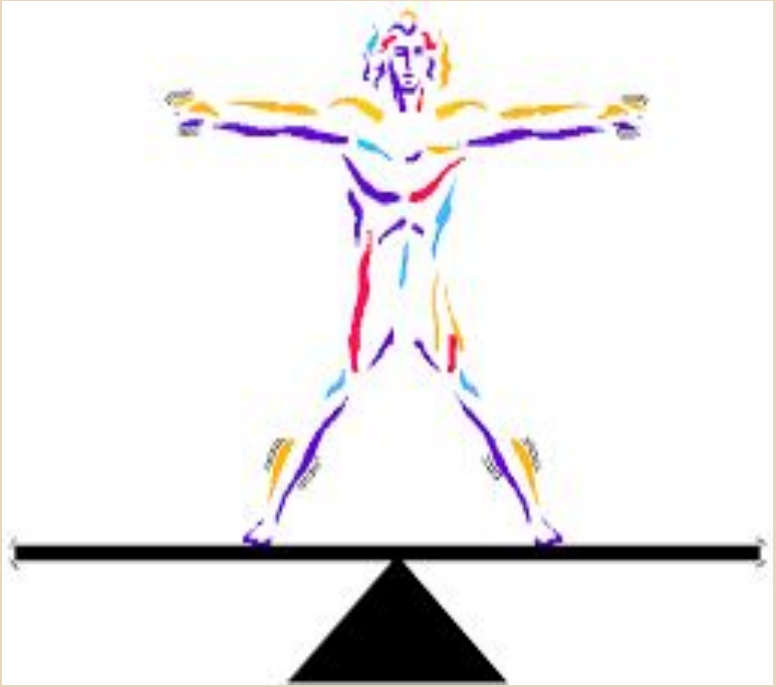
Metabolism

Chemical process that builds up or breaks down materials for life

…. pretty much eating, using energy and storing energy

Homeostasis

Homeostasis

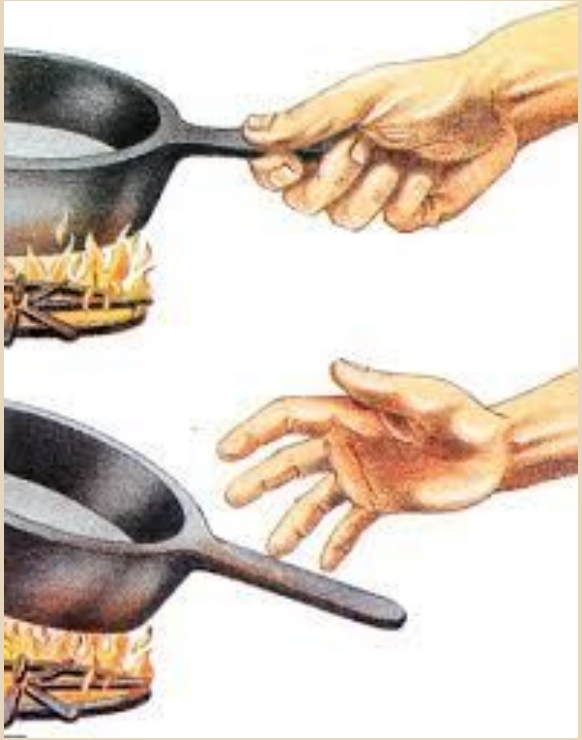


Process of keeping internal conditions stable

Sweating, shivering, increased heart rate, decreased heart rate, vasodilation (veins get bigger), vasoconstriction (veins get smaller), glucose levels, calcium levels

Feedback inhibition

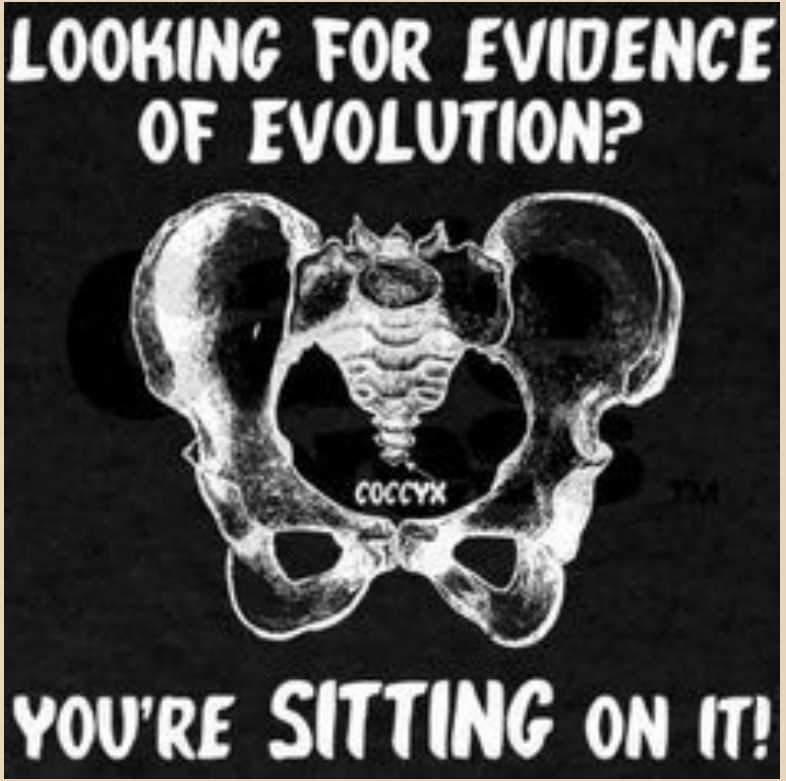
Feedback inhibition



Product of a system shuts down or limits its operation

← Muscular system is used to hold pan, pan is hot (causes pain), muscular system stops working

Evolve


LOOKING FOR EVIDENCE OF EVOLUTION?
COCCYX
YOU'RE SITTING ON IT!

Evolve

Change over long periods of time

Evolution is a theory