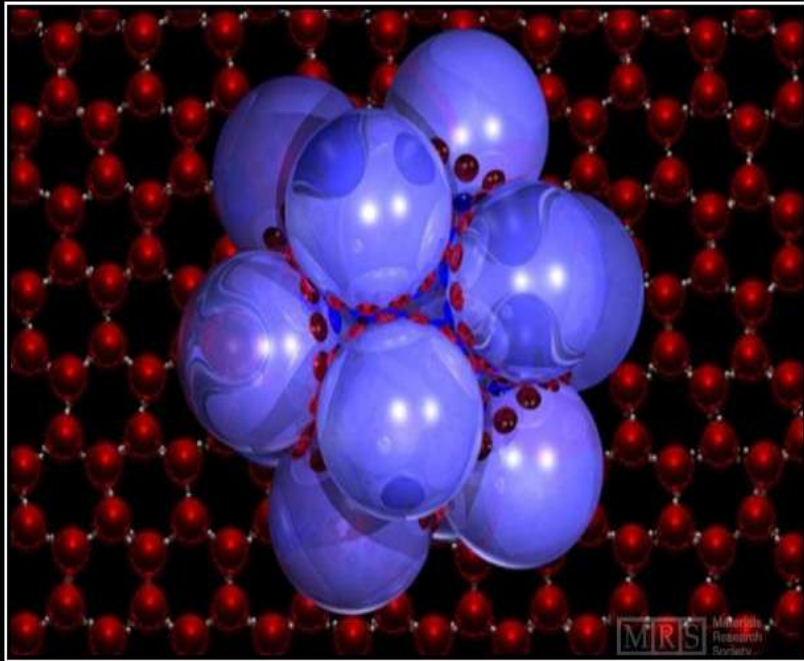


Ch 1 The Science of Biology

- 1.1 What is Science
- 1.2 How Scientist Work
- 1.3 Studying Life
- 1.4 Tools and Procedures

Ch 1.1 What is Science?



SCIENCE

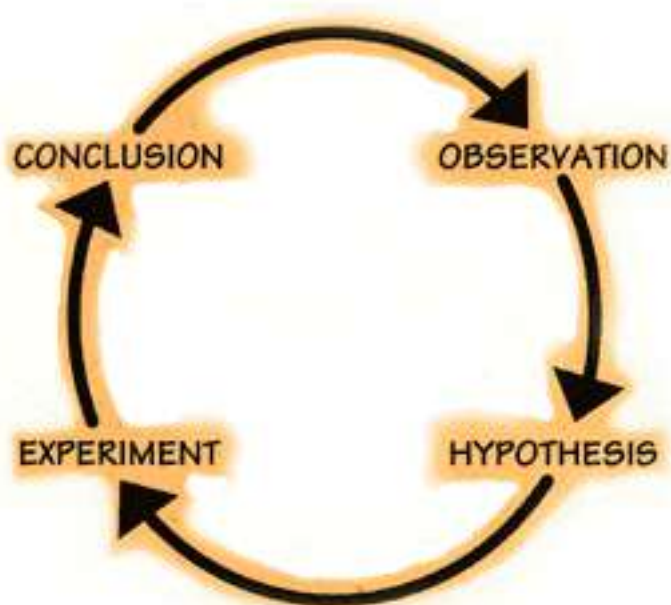
If you don't make mistakes, you're doing it wrong.
If you don't correct those mistakes, you're doing it really wrong.
If you can't accept that you're mistaken, you're not doing it at all.

- The goal of science is to investigate and understand the natural world, to explain events in the natural world, and to use those explanations to make useful predictions
- Science is an organized way of using evidence to learn about the natural world

Ch 1.1 What is Science?

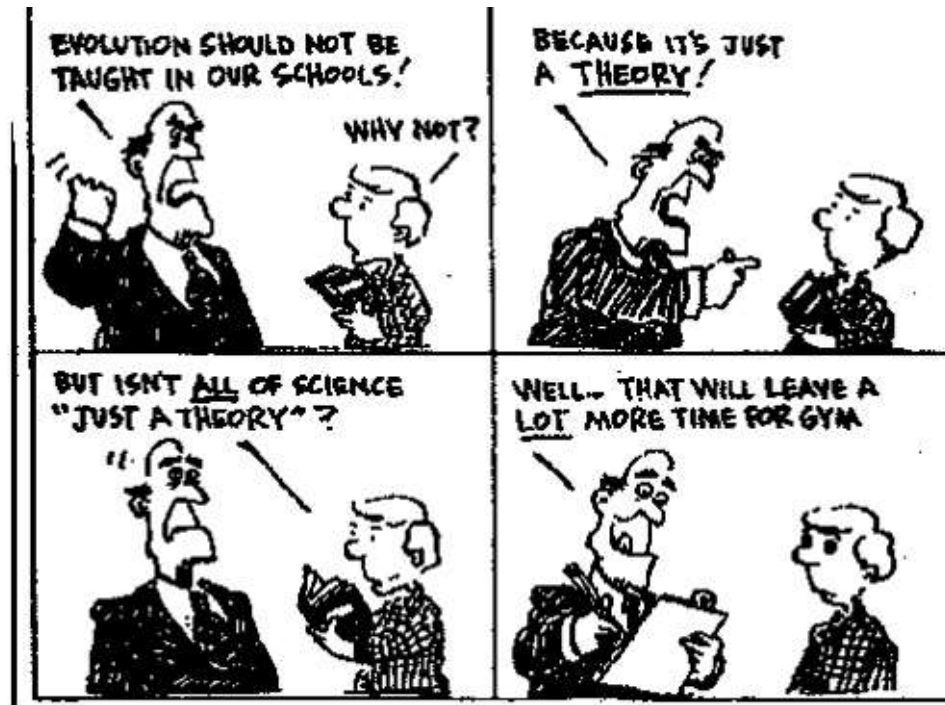
- Scientific thinking usually begins with an Observation, or gathering information
- This information that is gathered is called the Data
- Scientists use the data to make an Inference or a logical interpretation of that data

A Hypothesis is a proposed scientific explanation for a set of observations



Ch 1.1 What is Science?

- Science is an ongoing process- A process that involves asking questions, observing, making inferences, and testing hypothesis
- Due to Techniques, new tools, and discoveries sciences is always changing.
- A good scientist is always testing theories to see if



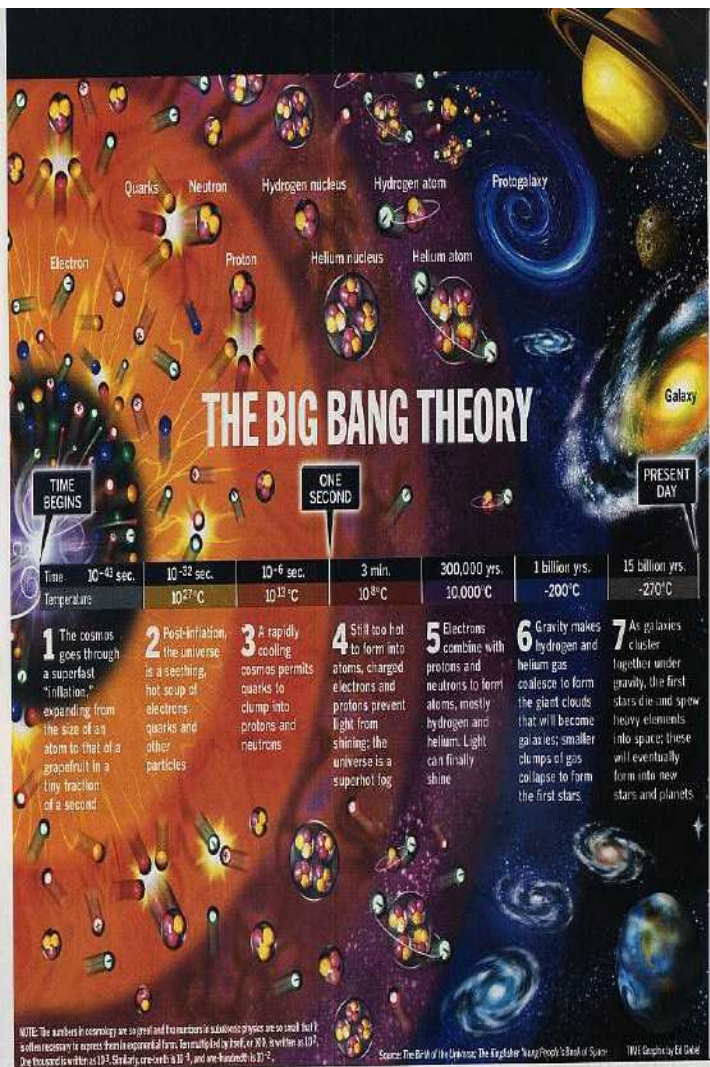
1.2 How Scientists Work



- Scientists Design an experiment by
 - Asking a Question
 - Forming a hypothesis
 - Setting up a controlled experiment
- Whenever possible, a hypothesis should be tested by an experiment in which only one variable is changed at a time-
 - This is called a Controlled Experiment
- The variable changed is called the Manipulated variable (Independent)
- The variable that is observed and that changes in response to the manipulated variable is called the Responding Variable (Dependant)

1.2 How Scientists Work

- Experiments must be repeated over and over to make the results more acceptable
- Once the results are acquired through multiple experiments with different independent scientists it will be considered a Theory
- In science, the word theory applies to a well-tested explanation that unifies a broad range of observations



Ch 1.1 & 1.2 Questions

- Pg 7 1-6
- Pg 14 1-5
- Do questions directly after your notes and they will be graded together as a whole assignment
- Always answer in complete sentences for full credit





Living things

1-3 Studying Life

- Living things share the following characteristics:
- Living things are made up of units called **cells, or the smallest unit of an organism that can be considered alive**
- Living things reproduce
 - Asexual Reproduction- Single parent produces an offspring
 - Sexual Reproduction- Cells from 2 different parents unite to form the first cell of a new organism
- Living things are based on a universal genetic code
 - DNA



Factors Affecting Metabolism



The more lean muscle mass you have, the higher your metabolism will be.



As you age, your metabolism naturally slows down. Expect your metabolism to decline by about 2% every decade after the age of 20.



Men have naturally higher levels of lean muscle mass. This means that women will generally have lower metabolisms than men.



As a result, taller people tend to have a more active metabolism and require more calories in order to stay energized.



Your genetic makeup will also play a role in your metabolism. Some families have a naturally high metabolism, while others have a naturally low metabolism.



The more often you eat, the more active your metabolism will be.



When you perform an activity, your metabolism will naturally speed up in order to burn up enough energy to fuel your bodily movements.

As you exercise, your body loses excess fat and begins to lay down increased amounts of lean muscle mass.



The thyroid gland releases a special hormone, known as thyroxine, which helps your metabolism to function properly.

Diabetes: Diabetes is a condition that results from an inappropriate response to your body's blood glucose (energy) levels. It can result in rapid weight loss or gain, heart problems, and circulatory disorders.



Some Foods, mainly Fruits and Vegetables, help increase metabolism:

- GRAPEFRUIT
- YOGURT
- ALMONDS
- APPLES
- SPINACH
- BEANS
- BROCCOLI
- OATMEAL

1-3 Studying Life

- Living things grow and develop
- Living things obtain and use material as energy
 - Chemical reactions through which an organism builds or breaks down materials is called Metabolism
- Living things respond to their environment
- Living things maintain a stable internal environment
 - Organisms detect and respond to Stimuli from their environment
- Taken as a group, living things change over time (Evolve)

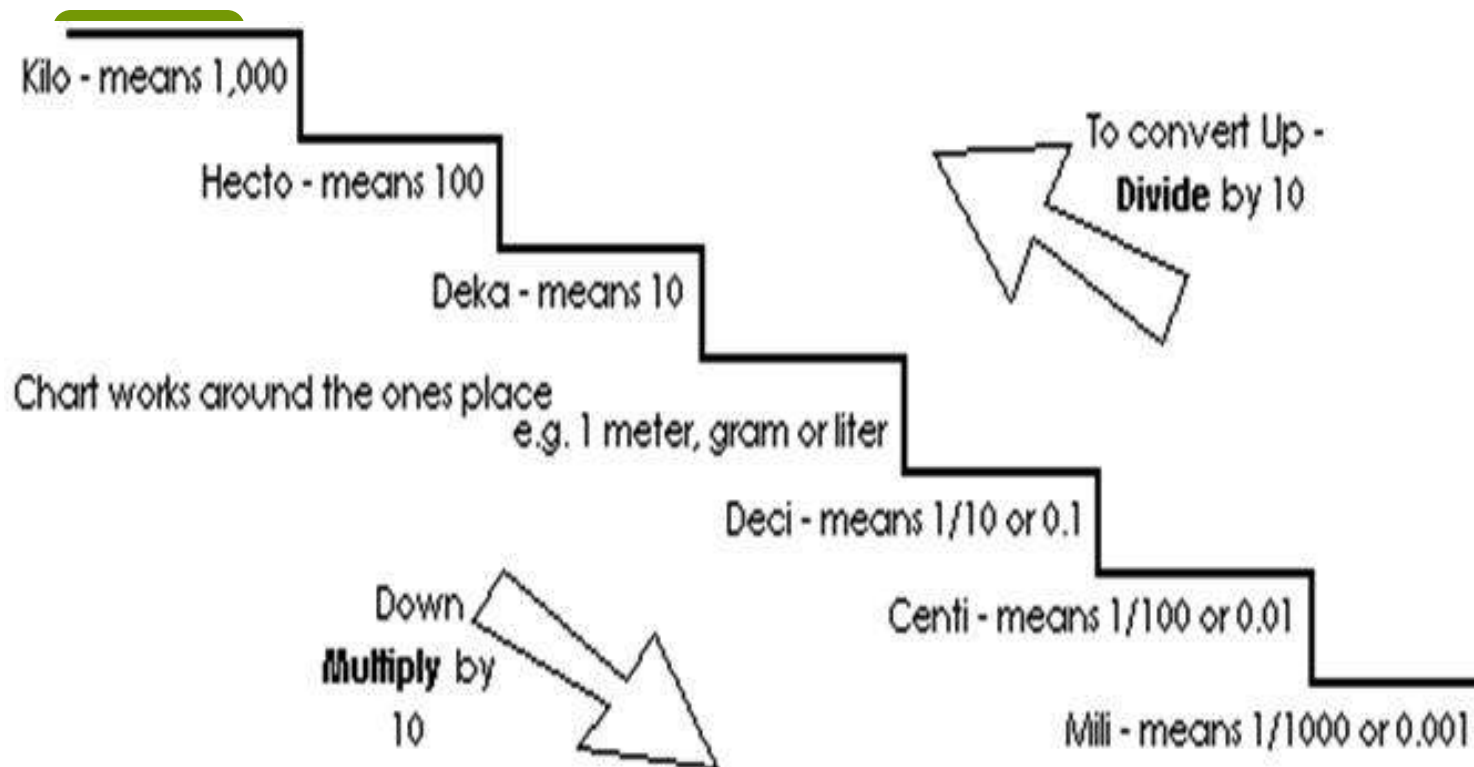
1-3 Studying Life

- Questions Pg 22 (1-6)
- Mon Guppy Lab & 1-4 NOTES
- Prelab- Read and start copying information you need Monday



1.4 Tools and Procedures

- Most scientists use the metric system when collecting data and performing experiments
- Base Measurements
 - Length- Meters
 - Mass- Grams
 - Volume- Liters





1.4 Tools and Procedures

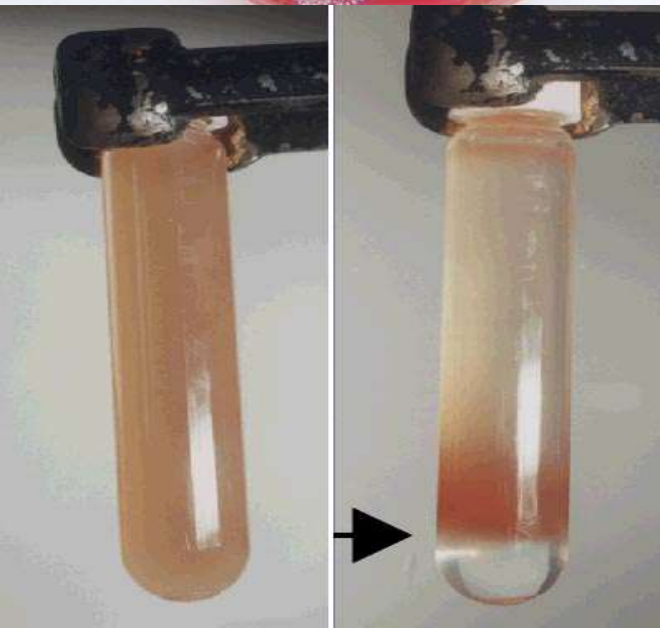
- Microscopes are devices that produce magnified images of structures that are too small to see with the unaided eye
- Compound light Microscopes allow light to pass through the specimen and use two lenses to form an image
- Electron Microscopes use beams of electrons and how they bounce or reflect off an item to produce an image



1.4 Tools and Procedures



- To obtain enough material to study , biologists place a single cell into a dish containing a nutrient solution and let it reproduce into a Cell Culture
- If scientists need to separate the parts of a cell the scientist will use a technique called Cell Fractionation
 - Cells are broken up in to a specialized blender then put into a centrifuge
 - The test tube is spun around until the heaviest items settle at the bottom and less dense part will rise to the top



1.4 Tools and Procedures

- Microscopes Next week
- Pg 28 (1-5) Tonight
- Guppy Lab NOW
- Review Tomorrow
- Ch 1 Quiz wed

