



ST. CATHERINE UNIVERSITY

Introduction to the Scientific Method

Scientific Method

- History of scientific method
 - What is the scientific method?
 - Inductive Method
 - Hypothetico–Deductive Method
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Experiment Design

- Sample Size
- Controls
 - Control Group
 - Treatment Group
- Psychosomatic effects
- Experimenter bias
- Statistical testing

Peer Review

- If your peers can't recreate or review it, then it is not good science!!!!

Facts, Laws, and Theories

- Fact: A scientific fact is supported by extensive and comprehensive data, they occur the same way every time, and maintain the same properties and behaviors. These can be verified by any trained person
- Law of Nature: Is a generalization about the ways in which nature operates. These are the result of the inductive method and allows you to make future predictions.
- Theory: is an explanatory statement or set of statements derived from facts, laws, and confirmed hypotheses.

Video

- Here is a fun little video about using the scientific method.
<https://www.youtube.com/watch?v=tUP8rFWzVt4>
- As you are watching it, answer the following questions:
 - Which would be treatment plant and control plant.
 - Is this an inductive or hypothetico–deductive an experiment?
- Note that this method is applied to an everyday problem that someone noticed in their house.



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Introduction to A&P

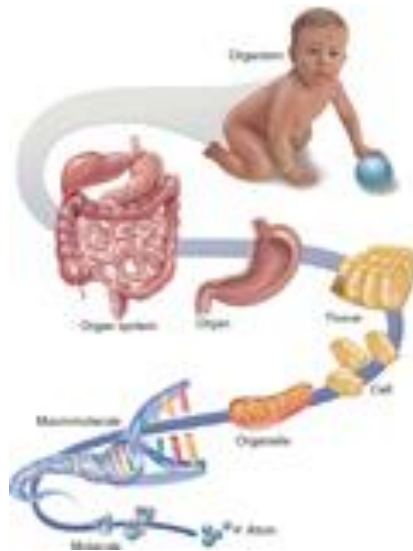
Intro to the Science

- Anatomy
 - Study of structure (morphology) and form.
 - Where things are, what it looks like.
 - Physiology
 - Study of function
 - How and why things work.
 - Not mutually exclusive.
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Levels of Organization

- Atom
- Molecule
 - Micromolecule
 - Macromolecule
- Organelles
- Cell
- Tissues
- Organs
- Organ System
- Organism

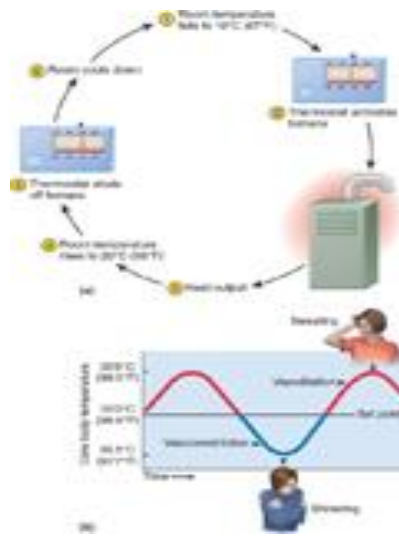
Hierarchy of Complexity



Homeostasis

- Maintenance of stable, internal conditions, regardless of changes in the external environment.
- Failure in homeostasis results in illness or death.
- Stressor
- Maintaining homeostasis –negative feedback loops
- 3 components of negative feedback loops:
 - Receptor
 - Integrating center
 - effector

Negative Feedback



Positive Feedback

- Another mechanism of the body
- Amplifies change!
- Examples:
 - Giving birth
 - Fever

Positive Feedback



Anatomical Position

- The purpose of anatomically correct position is to provide a consistent frame of reference.
- In anatomically correct position the person is standing upright with feet flat on the floor, arms to their sides, with palms and eyes facing forward.

Body Section and Planes

