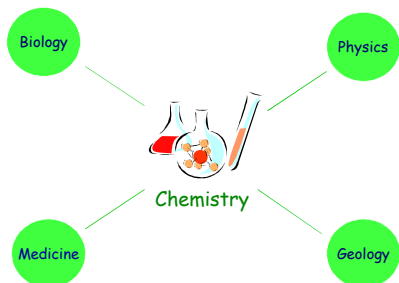


Introduction to Chemistry

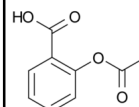
Considered central science of biology, physics, medicine, and geology.



Medicine



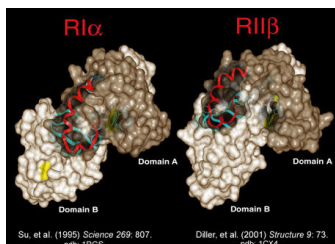
- **History**
 - 5th Century BC, Hippocrates discovered powder derived from willow bark that eased aches and reduced fevers.
 - Remedy found in ancient writings from Sumeria, Egypt, and Assyria.
 - Native American Indians used it for headaches, fevers, sore muscles, rheumatism, and chills.
 - 1828 Leroux and Piria isolated and identified it in its purest crystalline form.
 - Bayer found the derivatized form removed the negative side effects and began to mass produce it.



Acetylsalicylic acid

- **Medicinal Chemistry**
Combination of chemistry and pharmacy to design and develop pharmaceutical drugs.
- **Process of Drug Discovery**
 - Discovery
 - Optimization
 - Development

Physics



Molecular Modelling (or Computational Chemistry) provides insight to the structure of proteins.

Why is this important?

Geology



Polar Ice Caps
Elemental Analysis

- Dan Brown's Deception Point

Chemistry plays an essential role
in everyday life

&

Chemistry 130 is the foundation
of the world of Chemistry !

ABC's of Chemistry

The Scientific Method

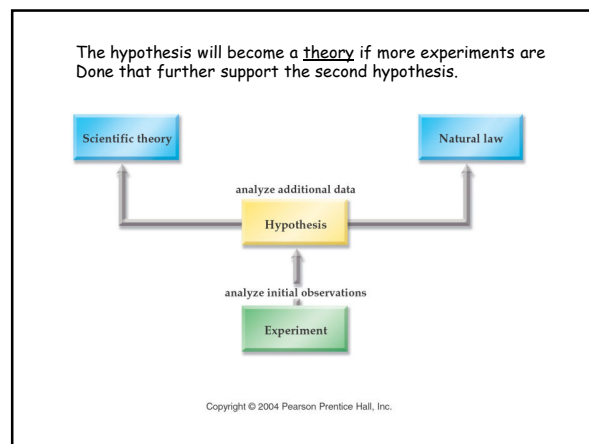
"No amount of experimentation
can ever prove me right:
A single experiment
can prove me wrong"
- Albert Einstein

- Robert Boyle (in 1661) published *The Skeptical Chymist* and his principles led to the development of the scientific method

The Scientific Method:
A systematic method based upon observable facts.

- I. State the problem
Collect data and make observations.
Quantitative Vs. Qualitative
- II. Formulate Hypothesis
Organize, analyze, and evaluate collected facts.
- III. Perform Experiments - Be Skeptical!
Do these experiments agree with the hypothesis?
yes -
no -
- IV. Develop New Hypothesis
Combine all hypotheses & observations and once they all agree a **theory** can be developed.

Theory: Sometimes called a model, is an interpretation of why something occurred.



What is the difference between a theory and a law?

A theory is an explanation of behavior
Whereas a law is a summary of observable facts

Law of Conservation of Mass
In a chemical reaction matter is neither created nor destroyed.

Dalton's Atomic Theory
All matter is composed of small, indestructible particles called atoms. (John Dalton 1766-1844)

Ask yourself - Is the proposed measurable?

YES	➡	Law
NO	➡	Theory

A Beginning Chemist: How to Succeed

Curiosity

Commitment

Practice, Practice, Practice!