

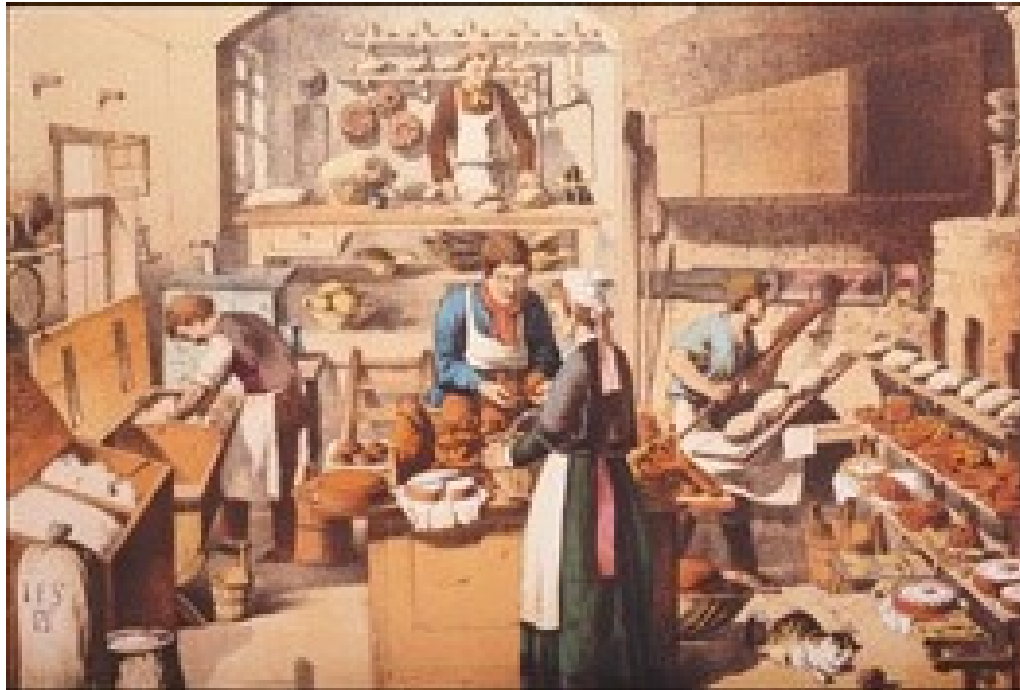
# Why Study Chemistry?

- To be better informed
- To be a knowledgeable consumer
- To make better decisions for yourself and society
- To learn problem-solving skills
- To enhance analytical thinking
- It will look great on your transcripts, provided you earn a good grade

# What is Chemistry?

- Chemistry = the study of matter and the transformation it undergoes
- What is matter? Matter is anything that has mass and volume. Your book defines it as *The material of the universe*
- **EVERYTHING is a CHEMICAL**
  - Table salt = sodium chloride, NaCl
  - Table sugar = sucrose, C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>
  - Clothes: Wool, Cotton, Polyester
  - Body: lipids, Proteins, Carbohydrates, DNA/RNA
  - You name it– it's a chemical!

## Chemistry in Action: cooking



- Cooking is chemistry in action, with the added benefit that you can eat the results.

# Chemistry is the driving force behind many “liberal arts”

- Composition of paints? Colors?
- Economies of industrial nations
  - #1 commercial chemical is sulfuric acid– LOTS of uses!
  - All industries involve chemical processes
- Economies of Developing Nations
  - Agriculture depends on chemicals as fertilizers, pesticides
- Politics and Natural Resources

# The Study of Chemistry

- Chemistry is everywhere!
- Matter is everywhere!
- Thus, chemistry matters!
  
- Chemistry involves the study of matter – its properties and behavior.

# 1. Organic Chemistry

- Organic is the study of matter that contains carbon
- Organic chemists study the structure, function, synthesis, and identity of carbon compounds
- Useful in petroleum industry, pharmaceuticals, polymers



# 2. Inorganic Chemistry

- Inorganic is the study of matter that does NOT contain carbon
- Inorganic chemists study the structure, function, synthesis, and identity of non-carbon compounds
- Polymers, Metallurgy



# 3. Biochemistry

- Biochemistry is the study of chemistry in living things
- Cross between biology and chemistry
- Pharmaceuticals and genetics





# 4. Physical Chemistry

- Physical chemistry is the physics of chemistry... the forces of matter
- Much of p-chem is computational
- Develop theoretical ideas for new compounds

**HONK** if you passed p-chem

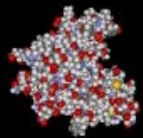


**LigandFit** computational chemistry

NT\_0.1.5 (2814) LIFE SCIENCES

Currently working on:  
energy grid completed  
starting docking run

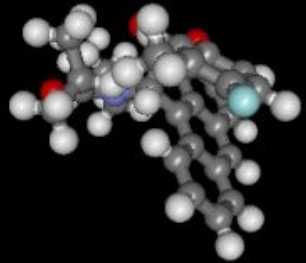
Current Protein Target:



Legend:

● Carbon	● Hydrogen	● Iron
● Oxygen	● Potassium	● Iodine
● Nitrogen	● Sodium	● Other

Current Prospective Ligand 3D Structure:

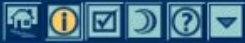


36 of 450 ligands processed

UNITED DEVICES™

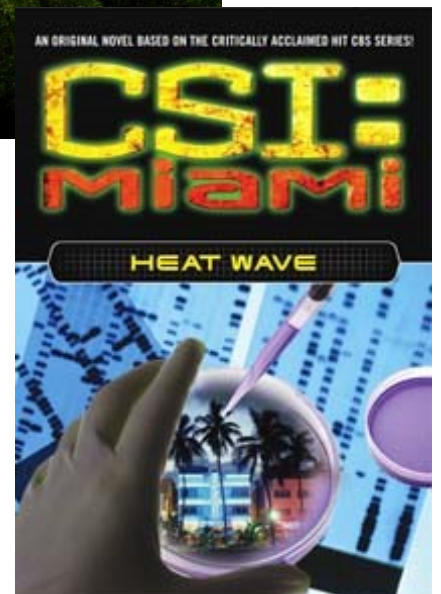
Chemistry @ University of Oxford

ACCELERATE time to market. UNITED DEVICES

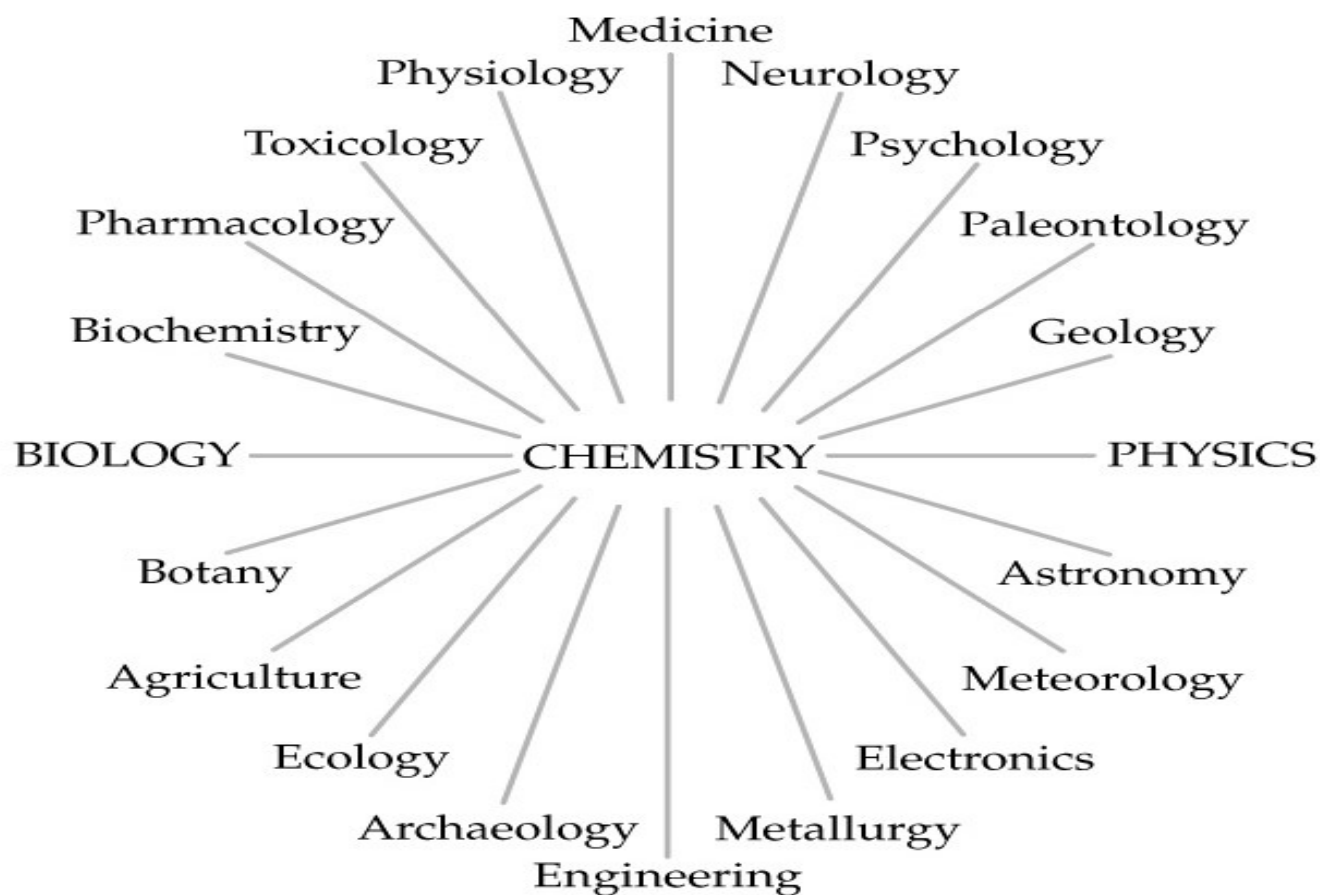


# 5. Analytical Chemistry

- Analytical chemistry is the study of high precision measurement
- Find composition and identity of chemicals
- Forensics, quality control, medical tests



# Chemistry as the “Central Science”



- In Semesters I and II all Botany Hons students compulsorily study GE Chemistry.
- Maths Hons students can opt to study GE Chemistry in Semesters I and II only.
- All Zoology Hons will study GE Chemistry in Semesters III and IV.
- Physics Hons have a choice of GE subjects in Semesters III and IV - Chemistry is an option for them.

- In Semester I the paper is 'Atomic structure, bonding; General Organic Chemistry'.
- In Semester II the students studying GE Chemistry have an option to choose any one of the two papers the Department offers. The department will discuss the possible papers permitted by the University and depending on the aptitude, inclination and interest of the students offer those which will help the students in their future course of study.

- All GE Chemistry papers are 6 credits : 4 lectures per week and one 4 -period practical per week.
- The Chemistry Department has well-equipped labs and we hope to be able to conduct face to face practicals with you in these labs as soon as the Government permits. Till then, of course, we will be having online theory classes and virtual practicals.