

## **Semester Overview**

### ***Bonding and Shape (review from General Chemistry)***

- Electron configuration
- Lewis structures
- Bonding
- Shapes of molecules
- Polarity
- Resonance (new)

### ***Acids and Bases (review from General Chemistry)***

#### ***Functional Groups***

- Naming
- Structure
- Physical properties

### ***Reactions and Mechanisms***

- Reactants
- Products
- Reagents
- Mechanisms
- Reaction intermediates

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## **What is Organic Chemistry?**

**Modern organic chemistry is the study of the structure and reactivity of compounds consisting mainly of carbon**

The main components of organic chemistry are the following:

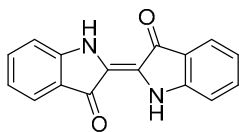
- **Structure determination:** How to determine the structure of newly synthesized or isolated organic molecules which may be available only in invisibly small quantities
- **Theoretical organic chemistry:** How to understand those structures in terms of atoms and the electrons that bind them together
- **Reaction mechanisms:** How to find out how organic molecules react with each other and how to predict their reactivity
- **Synthesis:** How to design new molecules and then how to make them
- **Biological Chemistry:** How to find out what nature does and how the structures of biologically active molecules are related to their function

**>95% of all known compounds contain carbon**

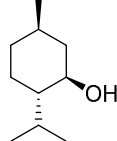
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**Organic Chemistry is Crucial to Our Way of Life**

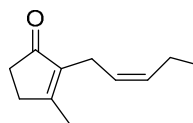
Dyes, Perfumes, Glues, Paints, Materials (Polymers), Petroleum, Pesticides, Medications, a Molecular Understanding of the Human Body. For example:

**Colors & Dyes:**

Indigo - the color of Blue Jeans

**Flavors & Scents:**

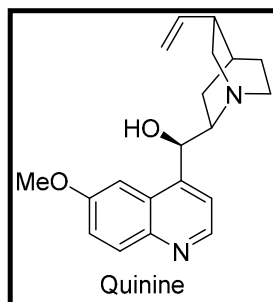
Menthol



cis-Jasmone

**Quinine:**

Cinchona Tree Bark



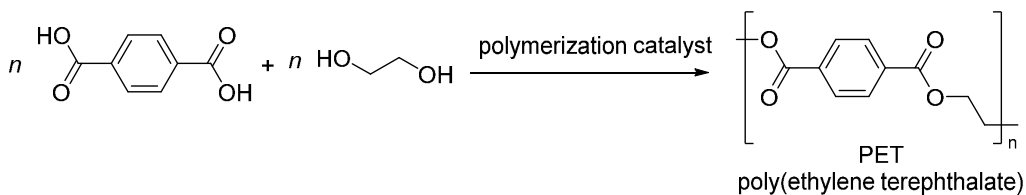
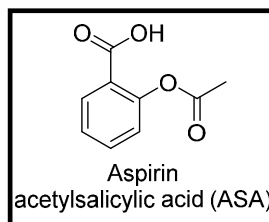
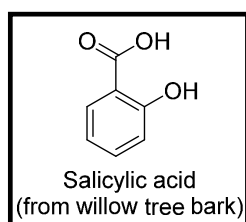
Quinine

Treatment of Fever,  
Malaria

Tonic Water

Organic Synthesis: Use  
as Chiral Organocatalyst

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**PET & Polyester:****Aspirin & Salicylic Acid:**Can be used  
to remove  
the outer  
layer of skin

Oral use possible

Nonsteroidal anti-  
inflammatory drugLowers risk of heart  
attacks and strokes

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