General Chemistry

CH 221

Professor Gwen Shusterman
Office: 350 SB2; 725-3897
Email: shustermang@pdx.edu
http://web.pdx.edu/~shusteg
Office Hours: M 12-1 W 9-10 R 10-11

Announcements

- Lab CH 227 - concurrent enrollment
- Labs meet this week - you must attend
- Pre-requisite: high school chemistry or an equivalent preparatory course
- And Completion of or concurrent enrollment in Mth 111 or high school algebra and trig

What is Chemistry?

Write two words describing what chemistry is.

What did you come up with?

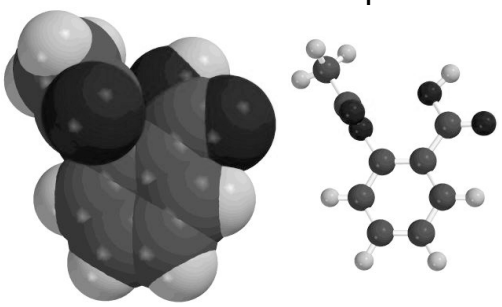
What is Chemistry?

- Science of materials around us
- Describing material and its changes
- Modeling systems - substances
- Quantitative: measuring, calculating

Advanced through:

- EXPERIMENT AND EXPLANATION

Pain Relief - Aspirin



Aspirin

Function:

- Relief of pain, inflammation and fever

Action:

- Inhibits production of prostaglandins

Prostaglandins:

- Produce fever, inflammation, etc
- Protect stomach and chemical balance in kidneys

Prostaglandin Production

Facilitated by two enzymes:

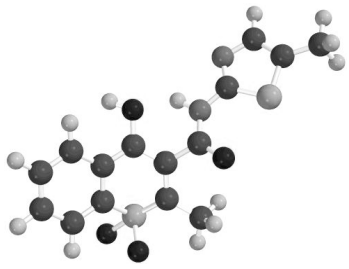
- COX-1
  - Accelerates production of “good” prostaglandin
- COX-2
  - Accelerates production of “bad” prostaglandin
- Aspirin interferes with both COX-1 and COX-2

Goal: “super aspirin” inhibit only COX-2

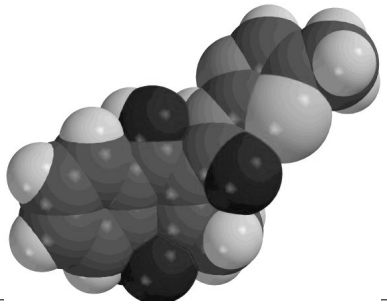
Research steps

- Test compounds known to inhibit prostaglandin production for effects on COX-1 and COX-2
  - Test other compounds closely related in structure
  - Two compounds found
- Determine structure of enzyme and find active site
  - Design molecules to fit shape of active site
  - VIOXX

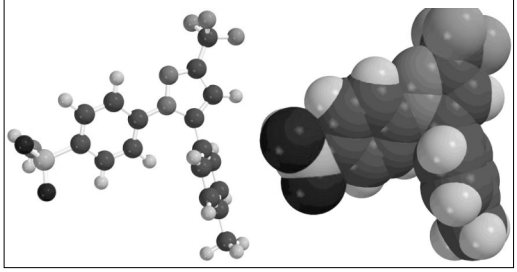
Meloxicam



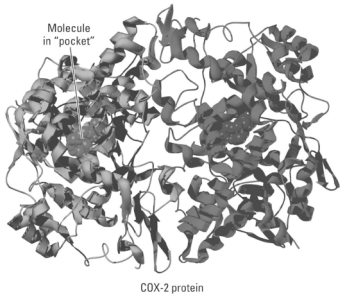
Meloxicam



Celecoxib



Moore/Stanitski/Jurs, Chemistry: The Molecular Science
Figure 1.1



Course Objectives - Goals

Foundations for understanding problem described above:

- know basic terminology
- recognize and name compounds
- quantitative chemical reaction problems
- know structure of atoms, molecules and compounds

Course Objectives

- be familiar with periodic table
- recognize periodic trends
- know basic bonding models
- correlate molecular structure with physical and chemical properties

How to find stuff on web

Go to course home page:
web.pdx.edu/~shusteg

Click on: WebCT

Follow log on instructions: there is a direct link to instructions and Technical tips here.

On MyWebCT page: select CH 221 Shusterman

Course Resources and Materials

CH 221 Home Page - WebCT

- Course Syllabus
- Course Calendar: deadlines / announcements
- Lecture Notes
- Pre-Assessment Activity - available now
- Bulletin Board - student use
- Course specific email addresses
  - To contact me please use: shustermang@pdx.edu

WEBCT Orientations Cramer Hall 322

Week 1

Week 2

Structure of Text

In class we will be doing

Group - in class problems

- Promote student interactions
- Thinking time in lecture (challenges)

ConcepTest questions

- Provide feedback to lecturer
- Check on understanding of concepts

Out of Class -structured activities

Lab Sessions

- Hands on with concepts and experimentation
- “Safe” environment to learn and try
- Illustrations of concepts learned in lecture
- Learn to work with experimental data
- Learn how to communicate scientific findings

Chemistry Workshops: CH 284

- Led by peer mentors
- Meet once a week for two hours
- Work challenging problems related to lecture material - provided by me
- Enrollment limited and voluntary
- Attendance mandatory (85%)
- Credit: 1 unit -> P/NP
- Shows grade improvement in lecture

Course Participation - ~15%

Participation points may be earned by:

1. In-class group exercises (everyone)
2. WebCT activities (everyone)
3. Enroll in chem workshop (choice) or
4. Mastering Chemistry exercieses (choice)

Participation - credit for effort

1. Problem solve in groups: (turn in work - names)
2. Complete activities - 2 quizzes, 1 tutorial, 1 assessment feed back form (submission automatic)
3. Pass CH 284 (records from leader) or
4. Mastering Chemistry - complete "Chapter Participation Problems" - see syllabus for instructions and course code (earn 75%, deadlines on WebCT calendar)

Keys for Success

Participate:

- attend class regularly
- read the text chapter and lecture notes before the corresponding class meeting
- take an active part in the in-class activities
- you must solve problems
  - work through all the assigned homework

More Tips:

- read the book – problem assignments come from chapter currently covering – read it all unless told otherwise
- book makes connections not always talked about in class
- problem assignments require a deeper understanding of material than just following lectures

Keys to Success

You must solve problems

- try additional textbook problems
  - Mastering Chemistry: "Practice for Chapter"
- see TA in help room, SB1 221
- Come to office hours

Suggested Homework problems:

Chap. 1: 37,41,45,50,51,59,61,63,67, 71,81,85,93,105,107,113,115

Question: How do iron and silver differ?

How can I tell them apart?

- Ideas?

What experiment might I run?

They behave differently when exposed to air and water !!!

This is example of a Chemical Property