

General Chemistry

CH 221

Professor Gwen Shusterman

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Office Hours: M 11:30-1 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
- 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?

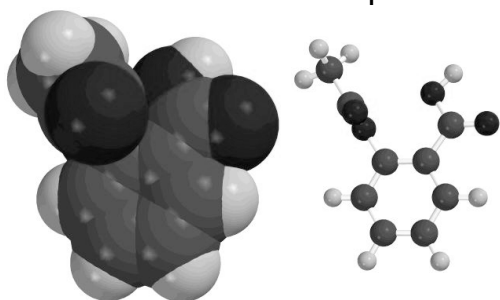
What is Chemistry?

- 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:

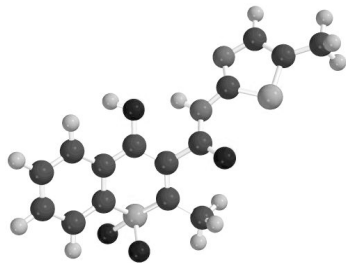
- COX-1
 - Accelerates production of “good” prostaglandin
- COX-2
 - Accelerates production of “bad” prostaglandin
- Aspirin interferes with both COX-1 and COX-2

Goal: “super aspirin” inhibit only COX-2

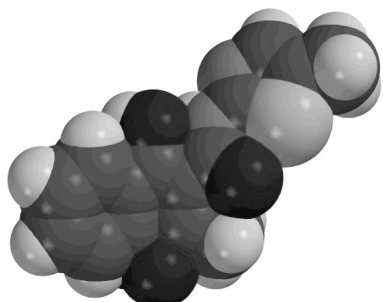
Research steps

- 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

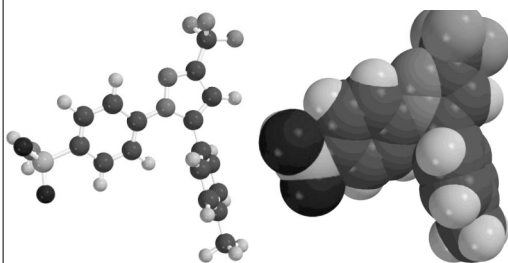
Meloxicam



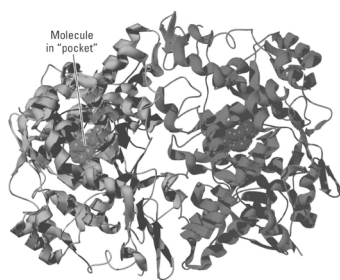
Meloxicam



Celecoxib



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



COX-2 protein

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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

Course Resources and Materials

CH 221 Home Page - WebCT

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

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

WEBCT Orientations Cramer Hall 322

Week 1

Tuesday, September 27th 9-10am, CH 324
Wednesday, September 28th 11am-12pm, NH 448
Thursday, September 29th 3-4pm, NH 437
Friday, September 30th 4-5pm, NH 437

Week 2

Monday, October 3rd 11am-12pm, CH 324
Tuesday, October 4th 9-10am, NH 448
Wednesday, October 5th 4-5pm, NH 439
Thursday, October 6th 3-4pm, NH 437

Structure of Text

- Chapter reading: examples - practice problems
- Interlude: applications – some problems
- Chapter summary: key words, concept summary or web – good review
- Understanding Key Concepts: problems
- Additional Problems - Homework: Chap 1
19 (interlude) 29,34,48,54,62,66,68,71,72,
76,82,86,90 (not to be turned in)

In class we will be doing

Group - in class problems

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

Concept 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
- Writing to learn opportunities using CPR – Calibrated Peer Review
- Small group work facilitated by lab instructor

Chemistry Workshops: CH 299

- 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 (80%)
- 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/quizzes (everyone)
3. Enroll in chem workshop (choice) or
4. Chapter quizzes – CD Activities (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 299 (records from leader) or
4. Chapter quizzes - complete CD rom quiz (turn in summary on paper) OR Submit results to my email address: shustermang@pdx.edu

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
 - Understanding Key Concepts - good check on reading – DO THESE
 - General Problems – good practice for problem solving
 - the Study Guide works out problems
 - Use text book web site
- see TA in help room, SB1 221
- Come to office hours

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
