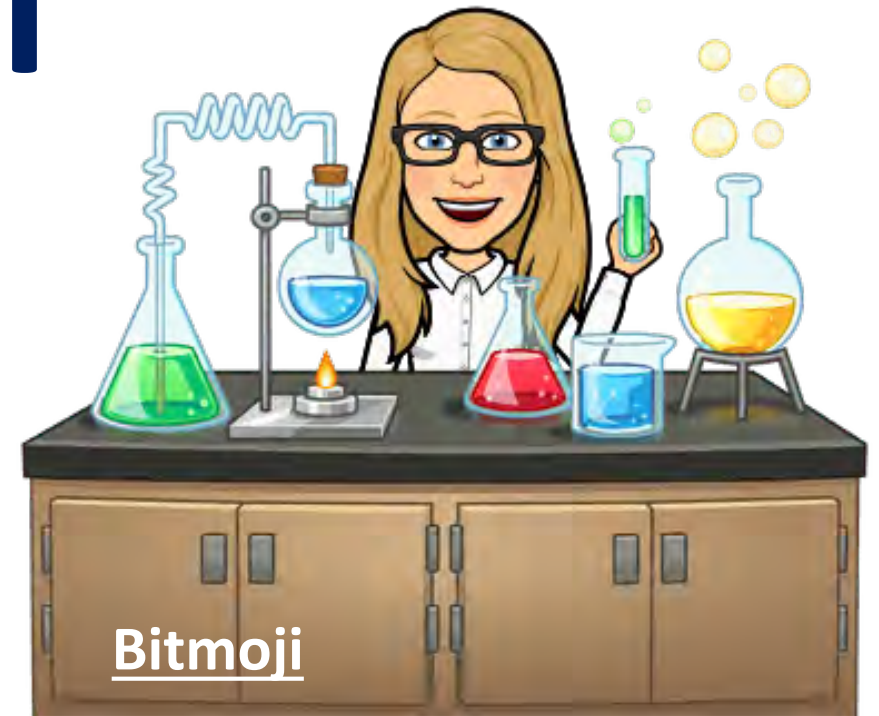


Course Redesign to Unlock 🗝️ Student E N G A G E M E N T

Laurie S. Starkey

Cal Poly Pomona

lsstarkey@cpp.edu



Resources for Organic Chemistry

BeyondLabz (\$30/year)



[COVID-19 remote teaching resources](#)

Animations
TLC &
Extraction

O-Chem Active Learning Repository
Worksheets,
Clicker Questions,
BeyondLabz...

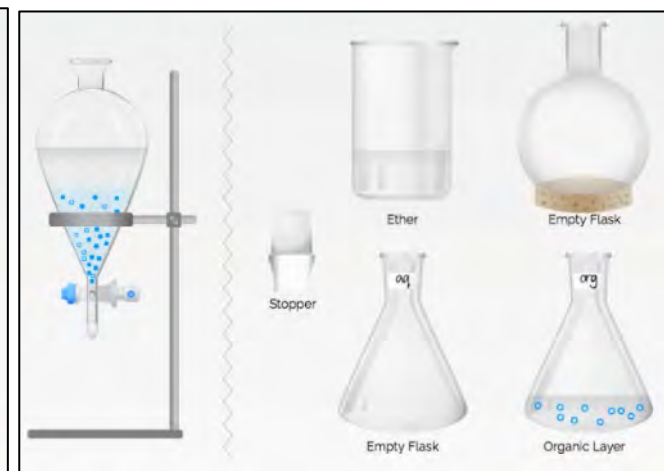
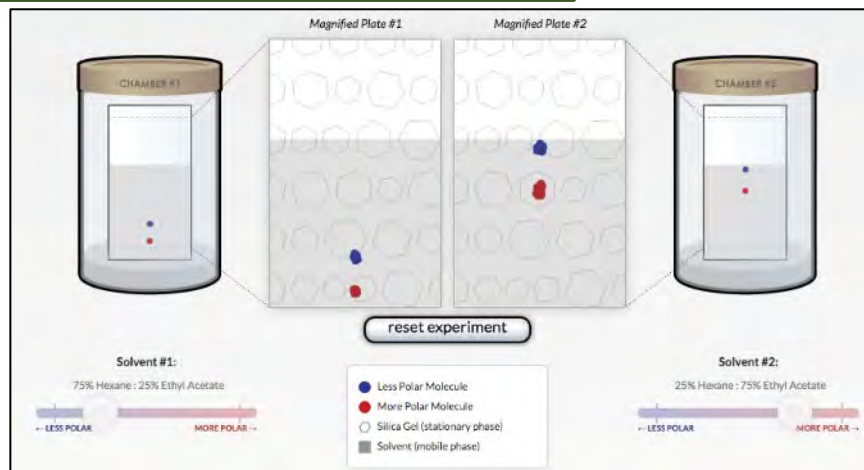
<https://www.cpp.edu/~lsstarkey/local>



During this step, is the **eugenol** in the organic or aqueous layer?



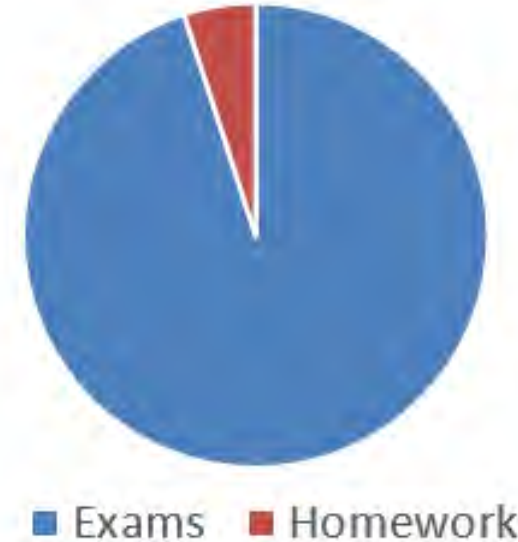
“Inquisitive” lab demos
eugenol video has over
12,000 views since March 2020



Remote Teaching → Course Redesign

To Reduce Cheating, *Minimize High-Stakes Exams*

- Pre-pandemic grading:
95% exams, 5% homework
- Major redesign needed!



Chap. 1, 2, 3	Exam I	100 pts (20%)
Chap. 4, 5, 15	Exam II	100 pts (20%)
Chapters 6, 7	Exam III	100 pts (20%)
Chapters 1-11	Final Exam	200 pts (40%)

Thursday, February 14 (50 min. during class time)

Thursday, March 14 (50 min. during class time)

Thursday, April 18 (50 min. during class time)

Tue, 5/14 or Thu, 5/16 (see schedule for times)

Remote Teaching → Course Redesign

New Grading Scheme

- 60% exams, lower-stakes final & lowest midterm is dropped
- 25% homework (WileyPLUS & “free red ink” assignments)
- 15% reflection (study groups, exam wrappers, writing prompts)

How will your learning be measured?

Course grades are based on textbook-based homework (EOC), occasional quizzes, brief weekly assignments, three written midterm exams, and a final exam. I am planning on proctoring the written exams synchronously via Zoom, but please let me know if you need to adjust your time slot. *Each exam is cumulative but will emphasize the immediately preceding chapters.* Exams must be taken as scheduled and **NO** make-up exams will be given, but **the lowest midterm grade will be dropped**. If more than one midterm is missed, a grade of zero will be assigned for the missing midterm exam(s).

Homework problems	125 pts (25%)	End-of-Chapter (EOC) problems/WileyPLUS/Quiz
Weekly study/reflection	75 pts (15%)	Friday Fives, OLC Study Group, Exam Wrapper...
Ch. 1, 2, 3	Exam I	100 pts
Ch. 4, 5, 15	Exam II	100 pts
Ch. 6, 7	Exam III	100 pts
Ch. 1-11	Final Exam	100 pts (20%)

Thursday, 2/18 (60 min. during class time)
Thursday, 3/18 (60 min. during class time)
Thursday, 4/22 (60 min. during class time)
Tuesday 5/18 (see schedule for times)



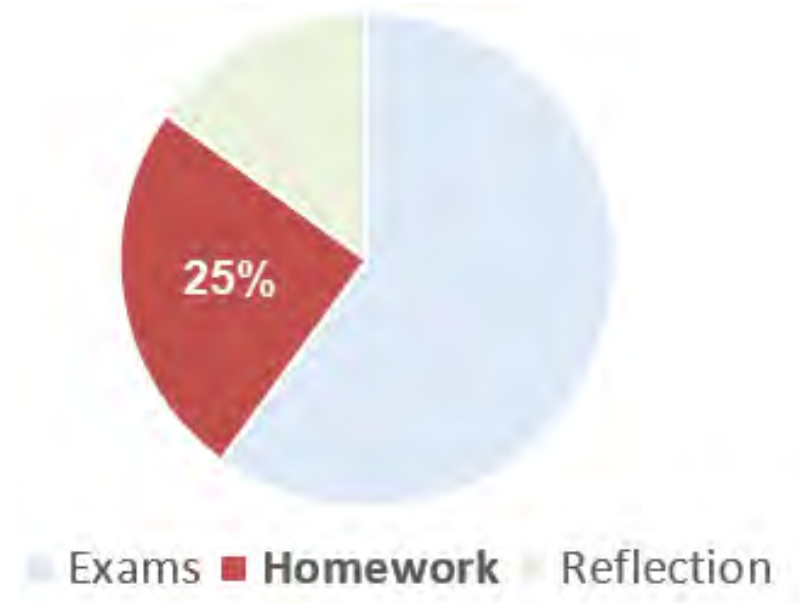
■ Exams ■ Homework ■ Reflection

Goal: Engage and Motivate Students!

WileyPLUS for Engagement with Textbook

25% Homework: Klein SkillBuilders and/or End-of-Chapter Problems

- If you value it, assign points to it!
(...and then students value it!)
- Encourages self-assessment and use of Solutions Manual
- **WileyPLUS**: interaction with e-textbook/resources, auto-grading = 24/7 feedback, 100% redesigned



WileyPLUS customizable course shell

Facilitates use of textbook, navigation through material

▶ Instructor Resources (Lecture Slides, Clicker Questions, Test Bank, Chapter Images)

▼ Getting Started

Klein, Organic Chemistry 4e, 2nd Semester

▼ Module 0: Academic Integrity

Academic Honesty Quiz
100 pts

▶ Module 3: Acids and Bases

▶ Module 4: Alkanes and Cycloalkanes

▶ Module 5: Stereoisomerism

▶ Module 6: Chemical Reactivity and Mechanisms

▶ Module 7: Alkyl Halides: Nucleophilic Substitution and Elimination Reactions

▼ Module 8: Addition Reactions of Alkenes

DID YOU EVER WONDER...what Styrofoam is and how it is made?

8.1 - 8.4: Introduction & Nomenclature of Alkenes
35 pts

8.5: Hydrohalogenation (SkillBuilders 8.1 & 8.2)
75 pts

8.6 - 8.8: Addition of H₂O (SkillBuilders 8.3 & 8.4)
80 pts

8.9: Catalytic Hydrogenation (SkillBuilder 8.5)
20 pts

8.10: Halogenation and Halohydrin Formation (SkillBuilder 8.6)
30 pts

8.11 - 8.13: Dihydroxylation and Oxidative Cleavage (SkillBuilders 8.7 & 8.8)
55 pts

8.14: Predicting the Products of an Addition Reaction (SkillBuilder 8.9)
30 pts

8.15: Synthetic Strategies (SkillBuilders 8.10, 8.11 & 8.12)
85 pts

End of Chapter Problems: Chapter 8
160 pts

Mechanism Quiz: Chapter 8
60 pts

8.6 - 8.8: Addition of H₂O (SkillBuilders 8.3 & 8.4)

Readings and Interactives:

8.6: Acid-Catalyzed Hydration

A Mechanism for Acid-Catalyzed Hydration of Alkenes

Mechanism 8.2 Acid-Catalyzed Hydration

8.7: Oxymercuration-Demercuration

8.8: Hydroboration-Oxidation

A Mechanism for Hydroboration Oxidation of Alkenes

Mechanism 8.3 Hydroboration-Oxidation

Solved Problem Videos:

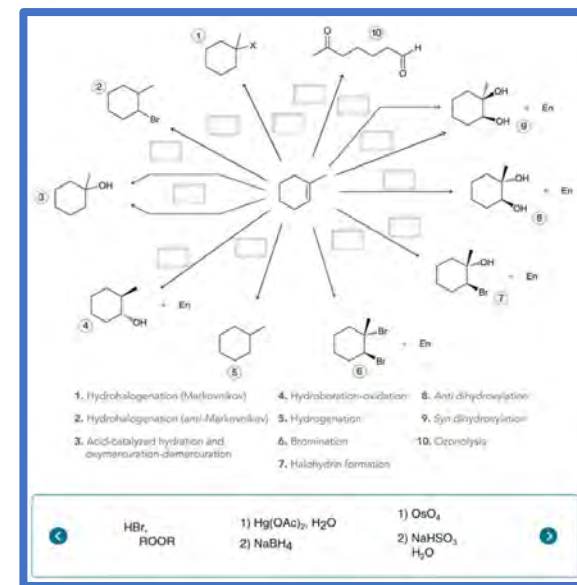
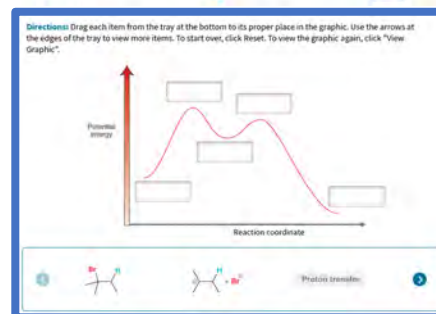
SkillBuilder 8.3, Problem 8.15a

SkillBuilder 8.3, Problem 8.15b

SkillBuilder 8.4, Problem 8.21

Legend:

Reading Video Interactive Lightboard



▼ ACS Final Review

ACS Problems: Chapters 1-6
52 pts

ACS Problems: Chapters 7-11
43 pts

ACS Problems: Chapters 12-18
56 pts

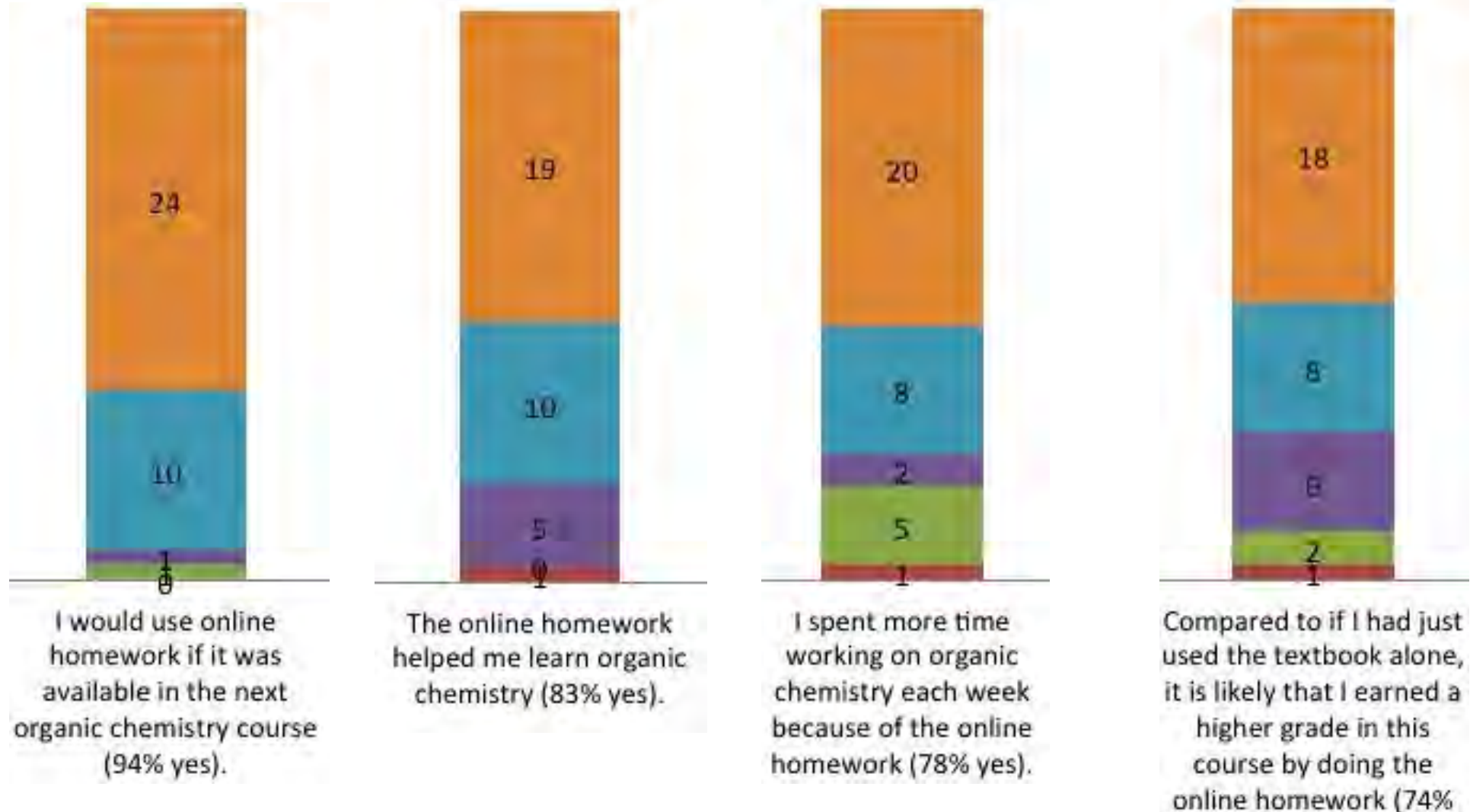
ACS Problems: Chapters 19-22
31 pts

Mechanism Quizzes: Chapters 7-13
25 pts

Online Homework = Favorable Feedback

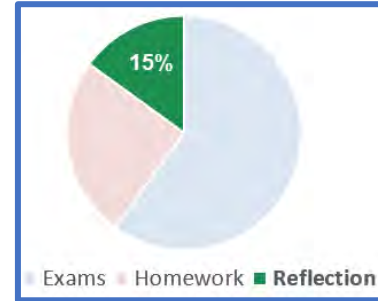
CHM 315 Online Homework Feedback (n = 36)

Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree Strongly agree



Keeping Students Motivated

15% of grade:
study groups and weekly
“Friday5” reflection



Motivate Lab training (**GPS**)

- **Growth Mindset**
- **Purpose & Relevance**
- **Sense of Belonging**

Teresa Hulleman

teresa@motivatelab.org



GPS: Encouraging a Growth Mindset

- Value formative assessment
(points for textbook problems!)
- Discuss study strategies
- Drop lowest exam
- Metacognitive exercises
 - Exam Wrapper
 - Weekly study plan check-in

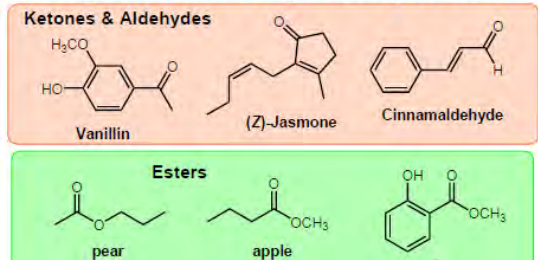


[resources](#)

GPS: Focusing on Purpose and Relevance

- Weekly reflection assignments
 - Find/share an interesting molecule
 - Tell me why this course matters to you
- Share stories of former students
- Provide “hooks” to grab attention

Fragrant Carbonyl Compounds



Common Names of Carboxylic Acids

formic acid found in Latin methanoic acid	acetic acid found in Latin ethanoic acid	propionic acid found in Greek propanoic acid	butyric acid found in Greek butanoic acid	valeric acid found in English pentanoic acid	caproic acid found in Latin hexanoic acid	heptanoic acid found in Greek heptanoic acid	caprylic acid found in Latin octanoic acid	pelargonic acid found in Greek nonanoic acid
capric acid found in Latin decanoic acid	undecylic acid found in Greek undecanoic acid	lauric acid found in Latin dodecanoic acid	myristic acid found in Greek tridecanoic acid	palmitic acid found in Latin hexadecanoic acid	stearic acid found in Greek octadecanoic acid	myristic acid found in Latin tetradecanoic acid	arachidonic acid found in Greek eicosanoic acid	behenic acid found in Latin docosanoic acid
myristic acid found in Greek tridecanoic acid	arachidonic acid found in Greek eicosanoic acid	behenic acid found in Latin docosanoic acid	lignoceric acid found in Greek tetracosanoic acid	cerotic acid found in Latin triacontanoic acid	montanic acid found in Latin triacontanoic acid	lignoceric acid found in Greek tetracosanoic acid	cerotic acid found in Latin triacontanoic acid	montanic acid found in Latin triacontanoic acid
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Interesting Alcohols: Can you Match Structure & Description?

Happy Halloween! (Jack-o-Lantern & fresh cut grass odor)

CCCCCCCCCCCCCCCCO
CCCC(C)O
CC(C)O
OC12CCC3C(C1)C(C(C2)O)C3
OC12CCC3C(C1)C(C(C2)O)C3
OC12CCC3C(C1)C(C(C2)O)C3
OC12CCC3C(C1)C(C(C2)O)C3

grain alcohol (beer, wine, margaritas)
 sucrose (table sugar)
 cholesterol (strengthens cell walls)
 a pheromone (attracts female mice to male urine)

Interesting Amines

NCCCCCCCCN cadaverine
NCCCCN putrescine
CC(N)C1=CC=C(O)C=C1 adrenaline (hormone)
CC(N)C1=CC=C(OC)C=C1 mescaline (peyote alkaloid)
CN1CC23C4C1CC5=C2C(=C(C=C5)OC)N3C4 morphine (opium alkaloid)

Smoke Taint in Wine

Lignin is found in the cell walls of wood and bark. The complex polymer breaks down into volatile phenols when burned.

CC1=CC=C(C=C1)OC guaiacol
CC1=CC=C(C=C1)OC 4-methyl guaiacol
CC1=CC=C(C=C1)OC o-cresol
OC[C@H]1O[C@@H](OC)[C@H](OC)[C@@H](O)[C@H]1O glycoconjugates (2)

Volatile phenols in smoke include guaiacol, 4-methyl guaiacol and cresols that may impart ashy flavors on wine.
 The non-toxic volatile phenols bind to sugars in the grape skins and berries forming non-volatile glycoconjugates with no smoke flavor or aroma.

Some Interesting Molecules!

Morphine: Treats excruciating pain
 Sodium Benzoate: preservative
 Theobromine: in chocolate (bad for dogs)
 Fructose: Fruit sugar
 Biotin (B7): healthy hair/nails
 Berdesvir: COVID drug by Gilead
 Serotonin: Happy? Depressed?
 Caffeine: study aid & can defend against Alzheimer's and Parkinson's
 Bupropion: depression & anxiety treatment
 Benzocaine: local anesthetic
 Midazolam: sedative for exotic animals
 Hemoglobin: Blood oxygen transport
 Linezolid: antibiotic
 4-Vinylanisole: Pheromone & Aromatic component of brandy
 Gingerol (Zingerone): Anti-inflammatory
 Salicylic Acid: pro-drug for aspirin, acne treatment
 Chlorophyll A: photosynthesis
 Glycine: (amino acid can treat metabolic disorders)
 Maltotriose: Deadly plankton product
 Dimethicone: shampoos, cosmetics, Silly Putty
 Selenocysteine: Amino acid used in NMR/radiology
 "Superbowl" Drug delivery

CPP Grad & Veterinarian Kim De La Peza

- B.S. Animal Science CPP 2008
 - D.V.M. Michigan State 2012
 - Emergency Room Vet
 - VCA Animal Hospital

What will your story be?

GPS: Build Community, Sense of Belonging

Introduction video

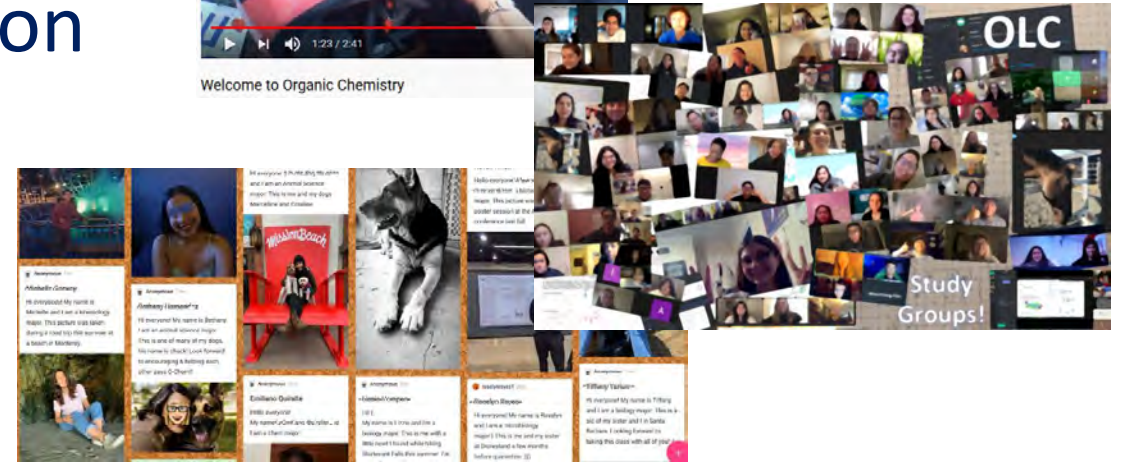
- Introduce yourself, share your passion



Welcome to Organic Chemistry

Course Padlet

- Students can introduce themselves

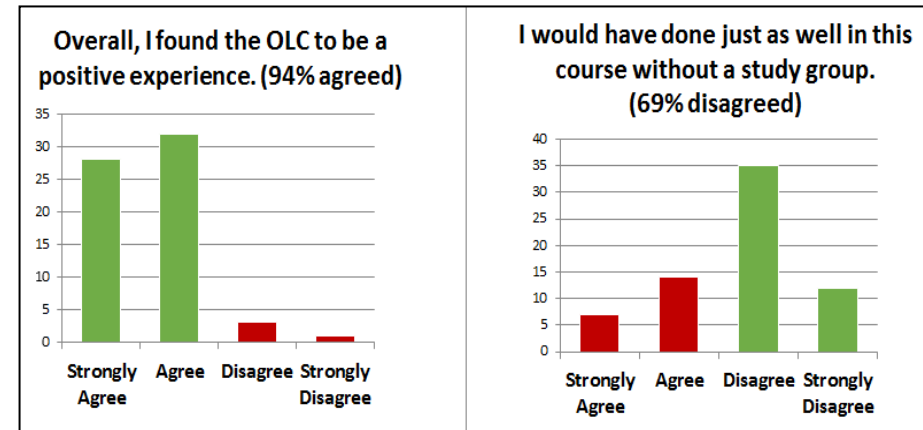


Encourage study groups

- Organic Learning Community (OLC)
- Offer credit for weekly report w/selfie pic

Foster communication

- Discussion boards, Discord, Google Voice



Friday5 Prompts (Gradescope)

- Create a Concept Map
- Add a Zoom Profile picture!
- Research/share Nanotech topic
- Start-Stop-Continue
(mid-semester feedback)
- Mental Health check-in
- Upload a picture of your flash cards
- Celebrate NCW (explore webpage)
- Favorite volunteer activities?
YouTuber? Autumn activities?

