

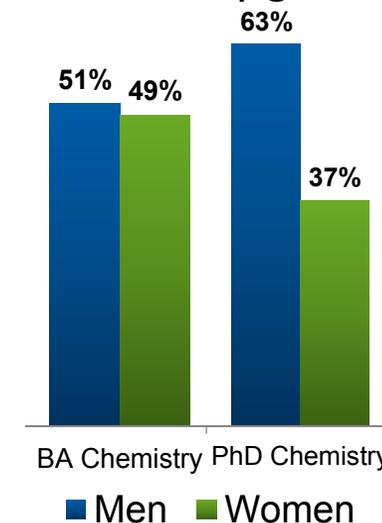
Introduction to Carbohydrate Synthesis and Glycobiology

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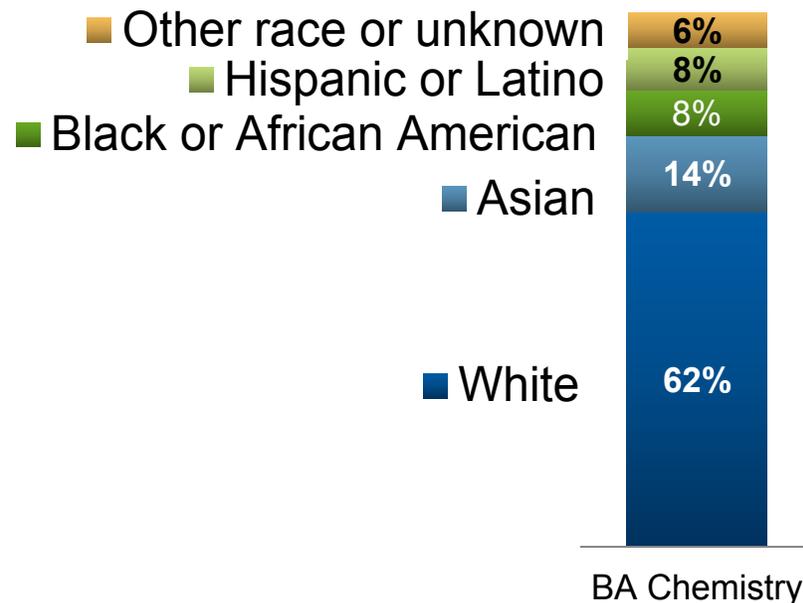
Proposed Student Background

- Junior and Senior Level Chemistry and Biology Majors
- Upper-Level Elective

Percentage of degrees awarded by gender

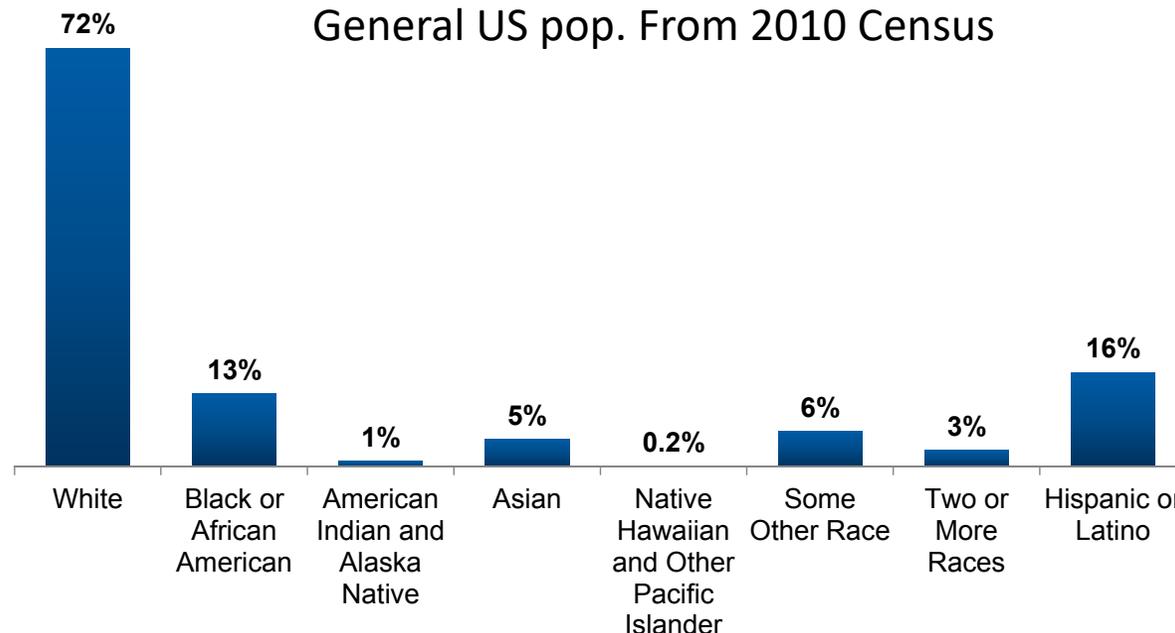


Racial Breakdown of population earning a BA degree



VS.

General US pop. From 2010 Census



Class Materials

Required

- Textbook: Essentials of Carbohydrate Chemistry and Biochemistry
 - Plan to eventually replace with textbook written for the course
- Primary Literature
 - Will be provided as needed
- Zoom account
- BeSocratic.com access
 - Ease of drawing
 - Ability to look at order of drawing from students
 - Currently only available at MSU

Optional

- Molecular Model kit

Course Structure

Proposed Structure

- Flipped-Style
 - Short “mini-lectures” and reading online
 - Synchronous sessions focus on small group work
- Summative Assessments
 - Two exams
 - Final NIH style research proposal

Potential Concerns

- Student preparation for synchronous sessions
 - Small-low stakes assignments pre-class to incentivize preparation for class
- Student access to reliable internet for synchronous sessions
 - Help students find libraries, cafes, etc. with free stable wifi
- Time management regarding final project
 - Chunk aspects (ex. Annotated bibliography, specific aims, intro, etc.)

Weekly Schedule

Pre-Class

- Reading and/or mini-lecture
- Small assignment

Class

- Small group activity
- Go over activity as vehicle to deliver key information

Post-Class

- Small scaffolding assignments for final project

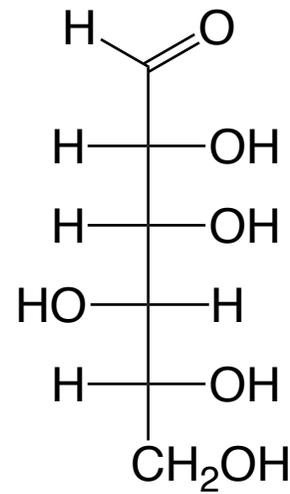
Example Activity: Switching Between Structural Depictions

Work sheet has instructions for switching between depictions

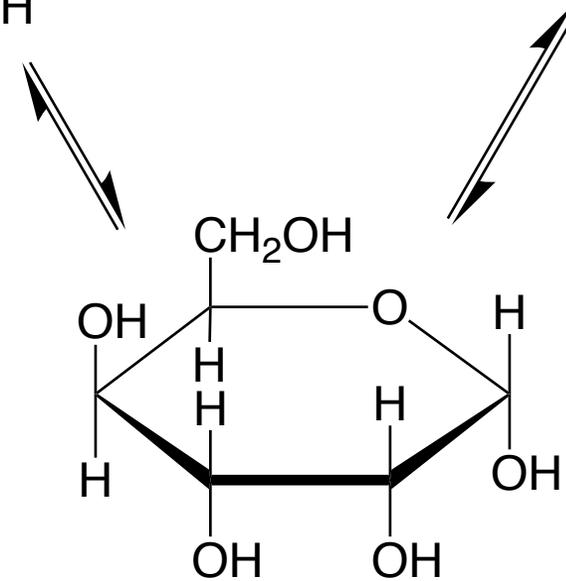
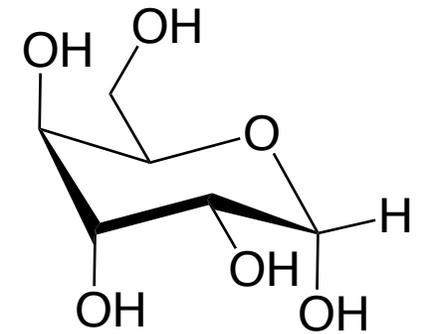
- 1) Go over rules while doing the 1st problem in front of the entire class
- 2) Break-out rooms in small groups to work together
- 3) Groups turn in a copy of what they have completed
- 4) Come back together and go over answers as a class

Groups get credit for a good-faith attempt on assignment.

Fischer Projection



Chair Conformation



Haworth Representation

Other Potential Activities

Synthesis

- Develop models
- Predict mechanisms
- Propose total synthesis

Biological

- Interpretations of primary lit. data
- Predict results of experiments
- Visualize pathways

Thanks, any questions?