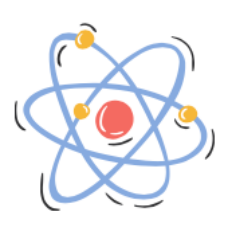
2021
Cc
Block 6

Chemistry

Poster Competition!

The department is having a school wide competition for posters that advertise subfields of chemistry and biochemistry to encourage more students to minor in chemistry. These posters can be made by individuals or teams of two and should highlight real world applications of chemistry and biochemistry.



Posters must follow the guidelines below:

- 11”x17”
- Submitted by April 22nd
- Include QR code to class requirements
- Focus on subfield or application of chemistry/biochemistry

Scan the code below to see some examples!

If you have any questions, please reach out to Bryan Swanson or Sriya Sharma for more information! (b_swanson@coloradocollege.edu, s_sharma@coloradocollege.edu)

Photo credit: Jennifer Coombes

Block 6 CC Chemistry Newsletter!

Happy 6th block everyone! With daylight savings time making evenings long and warm, spring really does feel upon us. This block we have lots of information to convey along with some great opportunities for all students. Off to your left you’ll see some details on our 7th block poster competition! We hope you will take some time to create a poster and get a chance at winning some great CC chemistry swag. Additionally, CH383 is holding a community-based webinar to discuss the implications of race in vaccine accessibility, building trust in communities, providing equitable access to resources, including access to health care, for all members of our community. Lastly, take a minute to read about a few more of our senior projects and the amazing work accomplished by Izzy Hensley and Tyler Walker.

-Sriya and Bryan

Featuring CH383: Biochemistry II

This block we are highlighting the CH383 Biochemistry II Course. The goal of this course has been to understand key biochemical processes by examining the HIV-1 and SARS-CoV-2 viral genomes and life cycle.

Throughout the course of the block, students have mapped the viral genomes, examined viral replication in the context of host immune systems, and studied the function of viral and host biomolecules and their impact on the viral lifecycle. Keep a look out for YouTube videos developed by the class which will present on key aspects of Coronavirus lifecycles.

In lab, students have worked with DNA and RNA samples to study the thermodynamics of structure formation using Isothermal Titration Calorimetry. Students will also use structure prediction programs to study key components of viral genomes to finish off the class!

Cecelia Schonlau -
Taking Biochemistry II this year has been a great way to continue to build my scientific foundation and learn more specifically about viruses and how they affect humans. I have enjoyed the opportunity to work on research & presentation skills, along with the community-based learning component where we put on our own webinar focusing on racism & vaccines. Additionally, I have loved to get back in the lab after a year of virtual learning and work on lab technique skills.

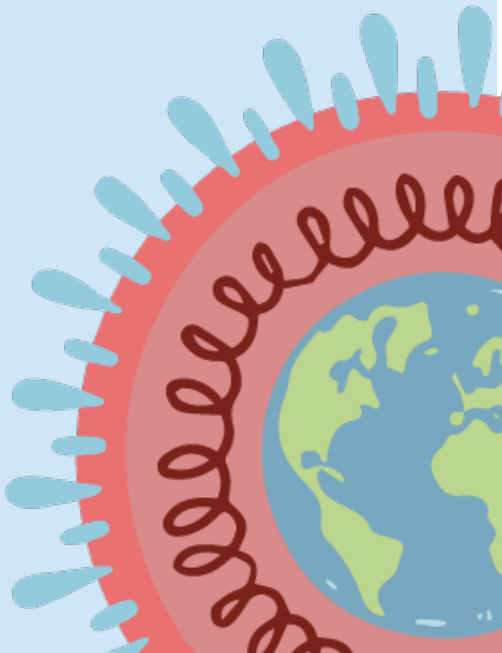
Professor Grover-
I have taught biochemistry using HIV-1 as a model system. The on-going pandemic made it clear that we will have to include biochemistry of Coronavirus. I started reading about this during Block 6, 2020 while teaching this class last year, just before the college closed. I have been very pleased with how it is going with this year's class. Everyone has been organized and motivated to learn about HIV and Coronavirus biochemistry; sometimes we are discussing things that came out that day. I am looking forward to how we pull it together with the presentations to the community – both the science videos and our panel on Race, Racism and Vaccines.

Race, Racism, and Vaccines

In the upcoming week, students will be further examining the science behind Covid-19 while addressing issues of access and trust in vaccinating all people, especially within communities of color. These discussions will be presented at the Race, Racism, and Vaccines Webinar!

On Monday, March 22nd, CH383 will be partnering with FG312 to hold the webinar as a part of the #FemSTEMSymposium. The webinar will begin at 12:30p.m.

Scan the QR code to Sign Up!



Senior Thesis Projects

Izzy Hensley

My senior seminar research focused on identifying floral volatiles emitted by *Pleurothallis* orchids. Due to their structure, Dr. Mark Wilson from the Department of Organismal Biology and Ecology hypothesized that species within the genus *Pleurothallis* are pollinated by pseudocopulation. Meaning, instead of producing a reward such as nectar, pseudocopulatory flowers emit pheromone-like chemicals to attract pollinators. I utilized Gas Chromatography-Mass Spectrometry (GC-MS) to identify chemical compounds in *Pleurothallis* species. I also completed multivariate analyses of the chromatogram data generated by the GC-MS to determine how similar the chemical profiles of different *Pleurothallis* species are to each other.

I have enjoyed this research very much, as it explores the chemistry of the world around us. It is interesting to see how something such as an orchid can be broken down into its chemical components, and that those components can tell us how the orchid may reproduce. I was also very fortunate to be able to conduct in-person on-campus research in the midst of the pandemic. The experience I have gained with instruments like the GC-MS is invaluable, as it will prepare to enter my field of interest: forensic chemistry. Many of the lab techniques I have learned at CC are applicable to this field and have made me a very competitive applicant for graduate programs.

Tyler Walker

Our research focused on developing new therapies for human African trypanosomiasis (HAT), a neglected tropical disease. HAT is caused by *T. brucei* parasites, and this research was based on inhibiting an essential *T. brucei* kinase. There were synthetic and computational branches to the project, and I worked with Ben Sokol and Saket Mereddy over the summer of 2019. One goal of the trypanosomiasis project was to model variations of a drug-like scaffold. And, particularly, to evaluate how varying the scaffold substituents could optimize predicted interactions between the drug and protein. By generating a database of different substituents to the scaffold, and using docking protocols, I computationally (qualitatively) predicted how the drug and protein would bind. After digitally screening more than one thousand compounds, two series stood out as the most promising inhibitors.

The best part of the research was being able to see and interact with the system at the atomic scale. It made for a fun puzzle—trying to figure out where steric bulk was tolerated, which interactions were unfulfilled, and what substituents efficiently balanced these factors. Ben and Saket were great labmates, and Dr. Dounay was supportive throughout the process. Summer research was a highlight of my time at CC, and I look forward to continuing the project next block.