

Biochemistry Lab
CHEM 3820
Fall 2021

Instructor: Erich G. Chapman, PhD
Office: Seeley G. Mudd, Room 103
Phone: 303.871.3681 (forwards to my cell)
email: erich.chapman@du.edu

Class Schedule: In person, SGM 109, 209, 259 Mon, Wed 1:00-4:50pm MDT
zoom url: <https://udenver.zoom.us/j/3038713681>

Office Hours: Monday and Wednesday mornings 9:30-11am
Also online by appointment as needed
zoom url: <https://udenver.zoom.us/j/3038713681>

Textbook: none needed, we will use primary scientific literature and protocols distributed in class

Course Website: <https://canvas.du.edu/courses/126454>

I'll use Canvas to supplement in-class instruction. Course assignments, lectures and supplementary materials will be uploaded as they accumulate.

Assessment:

There is an initial biosafety training assignment available on Canvas worth 20 points.

Five 20 point quizzes, each on a primary research paper related to the class' work will be administer on alternating Fridays throughout the term beginning with week 2.

At the end of each unit each group will prepare a figure portraying their results from the last ~3 weeks. These figures will encapsulate the results your team obtained throughout the training period and are group assignments. There will be 3 units, each with data that can be used to produce a figure. Each "figure" will be worth 20 points.

The will be one 20 point final assessment, the format of which will be announced closer to the end of the term and will depend on the progress of the class.

200 points total.

Tentative plans for each unit (subject to change):

Unit 4, not currently included. Involves site-directed mutagenesis and molecular cloning.

Unit 1			Unit 2			Unit 3			
Protein Expression and Purification			DNA/RNA: Synthesis and Purification			Enzyme Kinetics: RNA Degradation Assays			
	procedure	location	procedure	location	location	procedure	location		
Day 1	inoculate cultures, monitor OD's	SGM 123	mini-prep, send for sequencing, primer design	SGM 209		SDS page gel, spec intro	SGM 109		
Day 2	lyse and Ni-NTA chromatography	SGM 209, 111, 259	PCR, agarose gel	SGM 123		assay setup/ controls	SGM 109		
Day 3	SDS-PAGE gel, imaging	SGM 123	transcription/EtOH precip or PCR 2	SGM 209		kinetics 1	SGM 109		
Day 4	*possible re-start, or 2nd affinity	SGM 123/SGM 259	resuspension, quantification, dPAGE	SGM 123 or SGM 209		kinetics 2	SGM 109		
Day 5	gel #2/advanced characterization: circular dichroism	SGM 209/SGM 259	restart transcription or RNA cleavage assay	SGM 123		kinetics 3	SGM 109		
Day 6	advanced characterization: Western blot/wrap up	SGM 209/ SGM 259	advanced characterization/wrap up	SGM 123		advanced characterization/wrap-up	SGM 109		
Experimental goals:			Transcribe RNA			Kinetic Measurements			
Purified protein									
Technical Skills:			PCR, Transcription			Spectroscopy/Assay Design			
Liquid Chromatography									
Professional Skills/ Assessment:			Methods Reporting			Data Analysis			
Publication Quality Figures									

Additional Policies:

Diversity and Inclusion Statement:

Inside and outside of this classroom I expect everyone to respect one another and help foster a positive and inclusive learning environment. I will do my best to create an open and inquisitive classroom and would appreciate your help. If specific issues arise please let me know immediately in person or by email. We can work together to help resolve and correct them.

Additional resources addressing Diversity and Inclusion can be found on the Office of Diversity and Inclusion's website at: <http://www.du.edu/diversity-inclusion/index.html>

DU Honor Code:

All members of the University of Denver are expected to uphold the values of *Integrity*, *Respect*, and *Responsibility*. These values embody the standards of conduct for students, faculty, staff, and administrators as members of the University community.

Our institutional values are defined as:

Integrity: acting in an honest and ethical manner;

Respect: honoring differences in people, ideas, and opinions;

Responsibility: accepting ownership for one's own conduct.

A complete explanation of University's policies and procedures regarding student conduct can be found at: <http://www.du.edu/studentlife/studentconduct/media/documents/honorcode.pdf>

Title IX Statement:

The University prohibits discrimination on the basis of sex, including sexual misconduct, in its educational programs and activities. The University is committed to complying with Title IX of the Education Amendment Act of 1972 and ensuring that the University's education programs and activities are operated in a manner consistent with applicable federal law, regulations, and provisions.

Further information concerning DU's Title IX policies can be found at:
<http://www.du.edu/equalopportunity/policies-procedures>

Religious Accommodations:

University policy grants students excused absences from class or other organized activities for observance of religious holy days, unless the accommodation would create an undue hardship. Faculty are asked to be responsive to requests when students contact them in advance to request such an excused absence. Students are responsible for completing assignments given during their absence but should be given an opportunity to make up work missed because of religious observance.

Once a student has registered for a class, the student is expected to examine the course syllabus for potential conflicts with holy days and to notify the instructor by the end of the first week of classes of any conflicts that may require an absence (including any required additional preparation/travel time). The student is also expected to remind the faculty member in advance of the missed class, and to make arrangements in advance (with the faculty member) to make up any missed work or in-class material within a reasonable amount of time.

Students with Disabilities/Medical Issues:

University of Denver complies with the American with Disabilities Act and Section 504 of the Rehabilitation Act. Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs and what we can do jointly to accommodate them. If you qualify for academic accommodations because of a disability or medical issue, please submit a Faculty Letter to me from Disability Services Program (DSP) in a timely manner so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities/medical issues. Please contact the Disability Services Program located on the 4th floor of Ruffatto Hall; 1999 E. Evans Ave., to coordinate reasonable accommodations for students with documented disabilities/medical issues. 303.871/2278/7432/2455. Information is also available on line at <https://www.du.edu/studentlife/disability-services/>; see the Handbook for Students with Disabilities.

*Note that Letters of Accommodation from DSP are now being handled electronically. Please ensure that you have your letter forwarded through DSP to me within the first week of class.

There are other resources available on campus to help students with their learning and study needs. The Learning Effectiveness Program (LEP), a fee-based program that offers support services to DU students with LD and/or ADHD, which provides academic counseling, tutoring and other specialist services (<http://www.du.edu/disability/lep>, 4th floor of Ruffatto Hall, 303.871.2372). The Writing Center supports and promotes effective student writing helping with all kinds of writing projects: class assignments, personal writing, professional writing, and multimedia projects. They serve any student affiliated with the University and invite students in all classes, at all levels of writing ability, and at any stage of the writing process to visit us. To Schedule an Appointment: <http://myweb.du.edu>, Student & Financial Aid tab, Writing Center, 303.871.7456. They are located in the AAC and offer evening and weekend hours. The Career Center partners with faculty, staff, senior administration and employers, to help students and alumni make informed decisions about work and life. They offer self-assessment, career and educational options, self-marketing strategies and real-world experiences and can be contacted at <http://www.du.edu/studentlife/career>, 303.871.2150 and are located in the basement of the Driscoll Center.

COVID Specific Information:

Mask Policies:

This course will comply with University of Denver's COVID-19 Protocols for Personal Protective Equipment (PPE) and Social Distancing in accordance with state and local orders and federal guidelines. See for the complete policy. It is the expectation that students attending physically shall wear a face covering that:

- Cover the nose and mouth at all times
- Fit snugly but comfortably against the face
- Include multiple layers of fabric
- Allow for breathing without restriction
- Be disposable or be washable and machine dryable without being damaged or changing shape
- Be looped around the ears or tied behind the head and neck
- Remain in place until taken off safely
- Be replaced with one that does not need to be frequently adjusted if the initial face covering moves during work
- Be replaced when they become dirty, wet, and/or difficult to breathe through.

Failure to comply with DU's protocols for face coverings constitutes a violation of the honor code. If you are not wearing a face covering, the professor will ask you to do so. Refusal will result in the professor asking you to leave the classroom.

Safe Behavior in Class

Teaching and learning have always required safe classroom environments, so the current requirements in light of Covid-19 simply extend some principles of behavior long established in higher education. But these requirements are vital extensions, given the debilitating and deadly threat of the Coronavirus, not only for you personally but for those around you. In choosing to attend the University of Denver, you've chosen to join a larger Community of Care, which means you've chosen specific responsibilities—including in this class. By enrolling in the University of Denver and in this course, you have agreed :

- Not to attend class when you're sick.
- Not to attend class when you've been exposed to people who have or may have Covid-19.
- To practice social distancing always, keeping at least six feet from everyone else.
- To wear a mask—and wear it effectively—at all times

Social Distancing

This course will adhere to social distancing guidelines outlined in University of Denver's COVID-19 Protocols for Personal Protective Equipment (PPE) and Social Distancing in accordance with state and local orders and federal guidelines. See here for the complete policy.

All university personnel, students, and visitors shall maintain social distancing at all times while on campus to help prevent the spread of disease. This policy impacts in-person attendance as well as faculty-student interactions out of class such as during office hours. It is the expectation that social distancing measures include:

- Maintain 6-foot distancing from other individuals whenever possible.
- Classroom seating and workspace should be at least 6 feet apart.
- Office hours will be accomplished through online conferencing, email or phone.
- Unavoidable in-person meetings should be short in length and in a room where participants can keep a distance of six feet apart.

Social distancing should also be practiced as you enter and exit the classroom and during course breaks [if applicable]. [Based on classroom and building layout, faculty should consider providing guidelines and recommendations to discourage congregating in the halls. Please feel free to consult the OTL to brainstorm solutions for this. Failure to comply with DU's protocols for social distancing constitutes a violation of the honor code.

Classroom Attendance

It is the expectation that you attend class in person as required unless you have made alternative arrangements with me prior to the start of class due to illness, medical reasons, [other reasons], or the need to isolate or quarantine due to COVID-19. As in any in-person course, attendance and participation are crucial for a complete understanding of course material. In choosing to attend the University of Denver, you've chosen to join a larger Community of Care, which means you've chosen

(continued on the next page)

specific responsibilities—including in this class. By enrolling in the University of Denver and in this course, you have agreed:

- Not to attend class when you're sick.
- Not to attend class when you've been exposed to people who have or may have COVID-19.
- To follow the university's masking policy

According to university policy: "When the University places DU students or personnel in isolation or quarantine, the individual will receive documentation within their MyHealth record to provide to instructors regarding the duration of their quarantine or isolation and when and under what conditions they may return to in-person activities. The student is responsible for providing this documentation to instructors. The DU COVID Team can provide verification of a student's need to be isolated/quarantined should there be any question regarding compliance with University attendance and related COVID-19 policies. If a student must miss an in-person session due to illness (prior to having results from a COVID-19 test or when experiencing other symptoms of a communicable illness), the usual sickness policies should apply to the missed session. For example, if the instructor would normally require a doctor's note, that policy should apply. If a student receives a positive COVID-19 test off-campus or is notified by a public health authority about the need to quarantine, they must provide this notification at reportCOVID@du.edu or by calling 303-871-COVD. The University will then place the student in isolation and quarantine pursuant to University protocols, and this policy will apply."

Pivot Readiness

Per University of Denver Action Plan for Fall Return to Campus, this course has been designed to transition to fully online, should the need arise due to tightening local, state, or federal guidelines or campus closure. To that end, Canvas [other LMS if applicable] will be utilized to support this course. As noted in the action plan, "Regardless of class modality, student work shall be turned in digitally, with exceptions for such fields as the studio arts where physical artifacts are essential. Instructors requesting exceptions should clearly explain the need for students to submit physical work and provide the means to do so safely and conveniently. Instructors teaching in-person or hybrid courses should not distribute or receive paper materials."

To this end, the following will be available in our Canvas course:

- the course syllabus
- handouts
- readings
- assignment instructions

Updates that affect the delivery method of this course will be communicated in a timely fashion. If it becomes necessary to move this course completely online, any and all changes will be communicated to the students via a class Zoom meeting.

The University requires that all employees and students comply with the following personal responsibilities. Protocol urls are stable and linked below. Please check for the most up to date protocols regularly.

<https://www.du.edu/coronavirus/operations/protocols>

Face Coverings: All University employees, students, and visitors must wear a face covering at all times while on campus (inside buildings and outside) to help prevent the spread of the virus, with limited exceptions. Specifically, face coverings are not required for children under 3 years of age, and for certain medical conditions with documentation. Please note that while exceptions for medical reasons will be accommodated to the best of our ability, we cannot provide an accommodation that places others at risk; therefore, an accommodation to participate in class or related activities in person without a face covering will not be permitted.

Social Distancing: All University employees, students, and visitors must maintain 6 feet distance at all times while on campus to help prevent the spread of the virus. Social distancing is defined on campus as 6 feet distancing and maximum 50% room occupancy. Following signs and guidance within rooms should accomplish this; for questions, please ask your building's Building Manager (name and contact information available at the COVID-19 Portfolio site).

Cleaning and Disinfection: All University employees, students, and visitors must assist in maintaining a clean work and learning environment by cleaning and disinfecting personal spaces they use upon entry and exit. DU custodial staff will clean and disinfect common areas.

Symptom Monitoring: All University employees, students, and visitors coming to campus must complete the symptom monitoring survey. Employees and students must complete the survey twice each day on days they are on campus (before arrival and after departure), and once per day when they are not planning to come to campus. Visitors must be granted access following the visitor protocol and must complete the visitor symptom monitoring survey no more than 2 hours before arrival on campus. The Denver Department of Public Health & Environment requires that University employees perform symptom monitoring. This process assists in limiting the spread of the virus, identifying clusters early, and establishing quantitative data for contact tracing.

Contact Tracing: The University strongly encourages all employees, students, and visitors to download the digital contact tracing app. Use of the app is voluntary. Widespread use of digital contact tracing will increase the University's ability to manage the spread of the virus. Information on downloading the contract tracing app will be forthcoming. All employees, students and visitors must participate in manual contact tracing interviews and must provide complete and truthful information in a timely manner.

Testing: All employees and students coming to campus must complete a two "spit" tests test for the virus that causes COVID-19 before their Fall Return to Campus. A negative test result, either one completed via DU, or uploaded at myhealth.du.edu, is necessary for return access to campus. This also applies to individuals who are already on campus. Testing is one of the most effective ways to identify and quarantine asymptomatic individuals thereby significantly reducing transmission rates.

Quarantine refers to remaining in your home to the greatest extent possible when you may be exposed but are not positive or symptomatic and isolation refers to remaining in your home when positive or symptomatic.

All employees and students must quarantine if they have:

- Been identified as having close contact with a person who tested positive or is presumed positive with COVID-19
- Have traveled outside the US or to a US state that has high and escalating incidence of COVID-19.

And isolate if they have:

- Have tested positive or are presumed positive as diagnosed by a medical provider;

Reporting of Positive Test Result: All employees and students who are coming to campus, or have been on campus in the last 14 days, must promptly report positive COVID-19 test results to reportCOVID@du.edu so that the University can initiate appropriate contact tracing and building closure or disinfection.