

BCMB 406A
Laboratory Manual
Fall 2022

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Laboratory Procedures

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BCMB 406A Laboratory Schedule

Week	Dates	Lab(s)	Day 1 (5 hours)	Day 2 (2 hours)	Due Dates
1	Sep 12-16	Lab 1: Isolation & Identification of Peptides & Proteins	Bradford assay	1 st dimension of 2D-PAGE	
2	Sep 19-23		2 nd dimension of 2D-PAGE	Gel imaging & spot excision	
3	Sep 26-30		Tryptic digestion	Zip-tip plate spotting	Lab 2 calculations
4	Oct 3-7	Lab 2: Immunological Characterization of Cancer Cell Lines	Lab 1: Mass spec Lab 2: Cell culture & cell staining	Complete cell staining	
5	Oct 10-14		No labs	FlowJo tutorial	Lab 1 Report (Day 2)
6	Oct 17-21		Cell culture & T cell assay set-up	T cell assay development	
7	Oct 24-28		Data analysis	Data analysis	
8	Oct 31 – Nov 4		Chromatin prep, MNase digestion & reverse cross-linking	DNA purification & agarose gel	Lab 2 Report (Day 2)
9	Nov 7-11	Reading Break – No Labs			
10	Nov 14-18	Lab 3: ChIP Analysis of YEF3	Immunoprecipitation (IP)	IP & reverse cross-linking	Lab 2 Midterm Nov 17 6-8pm -

Course Description

In BCMB 406A, you will develop your practical skills to prepare samples for analysis using modern methods in laboratory research. In this process, you will become familiar with current techniques in biochemistry and microbiology; specifically you will get experience running samples on a mass spectrometer, HPLC, flow cytometer and QPCR machine. These 3-4 week experiments offer an introduction to project-based learning experiences where you will be given an opportunity to plan some logistical portions of your own experiment. Once samples have been processed, you will critically examine and interpret multiple sets of data to study complex problems.

In lab 1, you will learn how mass spectrometry and HPLC are used in the field of proteomics. In two parallel experiments, E.coli proteins will be separated by 2D gel electrophoresis and a Glu-C digest of insulin will be used to generate peptides that will be separated using HPLC. The resulting purified proteins/peptides will be identified by mass spectrometry.

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UVic Grading Scheme

A⁺	90 - 100	B⁺	77 - 79	C⁺	65 - 69	F	< 50
A	85 - 89	B	73 - 76	C	60 - 64	N **	< 50
A⁻	80 - 84	B⁻	70 - 72	D	50 - 59		

** N grades

Students who have completed the following elements will be considered to have completed the course and will be assigned a final grade:

- x In class lab work (all Day 1 and Day 2 practical components must be performed)
- x Midterm exam
- x Final exam

Failure to complete one or more of these elements will result in a grade of "N" regardless of the cumulative percentage on other elements of the course. An N is a failing grade, and it factors into a student's GPA as 0. The maximum percentage that can accompany an N on a student's transcript is 49.

DEPARTMENT INFORMATION AND POLICIES

1. The Department of Biochemistry and Microbiology upholds and enforces the University's policies on academic integrity. These policies are described in the current University Calendar. All students are advised to read this section.
2. Cell phones, computers, and other electronic devices must be turned off at all times during live class sessions unless being used for the purpose of connecting and engaging with the class.
3. No recordings of live lectures are permitted without permission of the instructor. However, many courses will be recorded by the instructor for accessibility for students unable to attend. If you do not wish to be recorded, contact your instructor to determine if alternative arrangements can be made. Attendance and engagement in the classroom is an integral part of the learning process and cannot be substituted with recordings. It is at the instructor's sole discretion whether they provide a recording or give permission to students to record a lecture. There is no obligation to do so nor is there any expectations about the quality of the recordings. Nor should students assume a lecture will be recorded as instructors may withdraw access to recordings or permission to record. It is the responsibility of students who miss lectures to catch up in the material through extra readings, and obtaining notes from fellow students. Students who miss several lectures due to illness should contact their instructors to discuss options.
4. Students and instructors are expected to assess their health daily and avoid campus if they are ill.
5. Course materials, such as notes, problem sheets, quizzes, examinations, example sheets, or review sheets, may not be redistributed without the explicit written permission of the instructor.
6. Students are expected to be available for all exams. Instructors may grant deferrals for midterm examinations for illness, accident, or family affliction. Although students do not require documentation, students must contact their instructor and BCMB office

(biocmicr@uvic.ca) with the reason for their absence within 48 hours after the midterm exam. The Department will keep a record of the absences. It is the responsibility of the student to

The survey is vital to providing feedback to us regarding the course and our teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to your [CES dashboard](#). You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device. We will remind you nearer the time but please be thinking about this important activity.