DALHOUSIE UNIVERSITY

BIOL 2020 Cell Biology: Fall 2023

Welcome to Cell Biology!
We are glad that you are here, and look forward to a meaningful, engaging term together.

Dalhousie University acknowledges that we are in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq People and pays respect to the Indigenous knowledges held by the Mi'kmaq People, and to the wisdom of their Elders past and present. The Mi'kmaq People signed Peace and Friendship Treaties with the Crown, and section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights. We are all Treaty people.
Dalhousie University acknowledges the histories, contributions, and legacies of African Nova Scotians, who have been here for over 400 years.

Teaching Team:

Dr. Nicanor González-Morales	**Mindy McCarville**	**Dr. Laura Tatar**	**Dr. Katy Garant**
			
nicanor.gonzalez@dal.ca	mindy.mccarville@dal.ca	ltatar@dal.ca	kgarant@dal.ca
Lecturer	**Course Coordnator** **Lab Instructor**	**Lab Technician** **Lab Instructor**	**Lab Instructor**
Contact me re: Lecture content Lecture quizzes Midterms and exam	Contact me re: Course administration Lab content and quizzes Lab test	Contact me re: Lab content	Contact me re: Lab content

Please email Nicanor for "lecture stuff" and Mindy for "lab stuff" and course administration.

Course Description:

Biology 2020 introduces you to the eukaryotic cell. Lecture content describes major cell components and activities at ultrastructural and molecular levels. The concept of the cell as an integrated structural, functional unit is developed. Lab content considers experimental approaches for studying cell biology, and explores the ways in which data and scientific information are effectively communicated.

Course Prerequisites: 1010 or BIOL 1020 or SCIE 1505 or equivalent (minimum grade of C).

Course Delivery:

Lectures: Presented in-person MWF. Lecture recordings will be made available, accessible through Brightspace. Consult with the **Lecture Schedule** document for an outline of dates and topics.

Labs: There are five lab sessions held throughout the term. Consult with the **Lab Schedule** document for specific dates and times. In-person attendance is mandatory; talk to Mindy if you are unable to attend a lab for any reason.

We are open to creating an inclusive learning environment for everyone.
We are willing to listen and learn about barriers and accommodate accordingly.

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Student Resources:

Office hours: We encourage students to email Mindy (for Course admin or lab-related things) or Nicanor (for lecture-related things) and we will respond as quickly as possible. As requested, we will schedule either an in-person or virtual meeting.

Brightspace resources: Brightspace should be your #1 source for help! You can find lecture slides, lecture recordings and all the lab-related materials on the site.

Course Goals and Objectives:

- Describe the process by which carbohydrates, lipids and proteins are assembled from monomers and identify their functional roles in the eukaryotic cell.
- Describe the structure and function of the organelles found in eukaryotic cells, demonstrating an appreciation for the overall architecture of the cell.
- Identify the components of biological membranes, including the various types of membrane proteins.
- Explain the fluid mosaic model and describe how membranes exhibit selective permeability.
- List the main components of the cytoskeleton
- Explain how cells are connected physically to other cells
- List the key products and features of glycolysis, the citric acid cycle, and oxidative phosphorylation and understand the flow of energy through the entire process.
- Recall the steps relating to cell division, understand what cellular processes happen at each step, and describe the control mechanisms for the process.
- Understand the mechanism by which cells communicate and name a few examples.
- Demonstrate pipetting proficiency.
- Describe how cells can be maintained *in vitro*.
- Demonstrate the basic steps to align a compound microscope.
- Calculate cell concentration using a hemocytometer.
- Design an experiment using replicates and controls.
- Prepare a protein dilution series.
- Describe how protein can be extracted from cells and how protein concentration can be calculated.
- Calibrate a spectrophotometer.
- Construct a standard curve to determine sample concentration.
- Present data in the form of a table and graph with proper formatting.
- Describe protein electrophoresis and western blotting theory and interpret western blotting data.
- Describe how immunofluorescence can be used for subcellular localization of proteins.

Suggested Textbook:

There is no "required" textbook for this course. The midterms and final exam are based on lecture content only. However, Nicanor strongly suggests you complement the lectures with a textbook of your choice:

1. **Becker's World of the Cell** (Harden and Bertoni, published by Pearson) *(this is the e-book you can purchase from the Bookstore – link on our Brightspace page!)*
2. **Molecular Biology of the Cell** (Alberts et al, published by Norton), or
3. **Karp's Cell and Molecular Biology** (Wasa and Marshall, published by Wiley).

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Technical Requirements:

You will need reliable internet connection, with access to software for writing and graphing. Dalhousie students can download the entire Microsoft Office 365 Suite (full version) from Dalhousie for free. For our course, we recommend that you have the full version. If you want to access the online apps, click the ⋮⋮ in the top left-hand corner. Keep in mind that the online apps may lack some of the features normally available in the full version of Microsoft Office. We also recommend that you familiarize yourself with other free programs, including Adobe Acrobat Reader DC.

Course Assessments:

(Please see the "Lab Schedule" and "Lecture Schedule" documents for a detailed weekly breakdown!)

Component	Due Date (AST – Halifax time)	Value	Notes
Lecture: (60%)			
Lecture Quizzes	Sundays at 11:59 pm (Consult the Lecture Schedule for dates!)	5%	• 5 quizzes, worth 1% each. • Each one is cumulative. • Grade awarded on participation only. • Accessed through Brightspace.
Test 1	Thursday, Oct 12th 8:30 pm - 9:30 pm	10%	• Multiple Choice. • Includes content up to and including Week 5 • Room assignments TBA.
Test 2	Tuesday, Nov 21st 8:30 pm - 9:30 pm	15%	• Multiple Choice. • Cumulative, includes content up to and including Week 10. • Room assignments TBA.
Final Exam	To be scheduled by the Registrar's Office	30%	• Multiple Choice. • Cumulative; includes lecture content from **all** weeks
Lab: (40%)			
Lab Flowcharts	Your lab day, prior to start time	2.5%	• Five flowcharts, each worth 0.5%
Lab Quizzes	Your lab day, prior to start time	5%	• Five quizzes, each worth 1.25% • Lowest grade will be dropped.
Lab Assignments	Your lab day, before the lab end time	17.5%	• Five assignments. • Paper copy of the assignment is to be submitted before you leave the lab. (The exception is Lab 2, which requires work to be submitted to Brightspace by indicated deadline.)
Lab Test	Monday, Dec 4th 7:30 pm - 8:30 pm	15%	• Short answer • Room assignments TBA.

Note that Test 1, Test 2 and the Lab Test are all <u>in the evening, outside of classtime</u>.
If this presents a conflict for you, please contact Mindy to make arrangements for a make-up test.

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Policies for Missed Assessments:

Note: BIOL 2020 does not use Student Declaration of Absence (SDA) forms.
You must email Mindy if you miss an assessment.

Assessment	What happens if you miss it?
Lab Quizzes	• You will get zero on the quiz. *(see Notes below)*. • Lowest quiz grade will be dropped.
Lecture Quizzes	• You will get a zero on the quiz. *(see Notes below)*.
Lab Assignments	• Lab assignments must be submitted by the end of your lab time, or in the case of an electronic submission, by the specified time. *(see Notes below).*
Midterms	• You must contact Mindy prior to midterms, along with the reason for not writing the test at the designated time. • In the case of a valid excuse, a make-up will be scheduled within 7 days of the original date. Two opportunities for a make-up will be provided. If you cannot complete the test at either make-up time, the weight of the test will be added to the final exam.
Lab Test	• You must contact Mindy prior to the lab test along with the reason for not writing the test at the designated time. • In the case of a valid excuse, a make-up test will be scheduled within 7 days of the original date. Two opportunities for a make-up will be provided.
Final Exam	• You must contact Mindy prior to the exam, along with the reason for not writing the exam at the designated time. • In the case of a valid excuse, a make-up exam will be scheduled within 7 days of the original date. If you cannot write the make-up examination on the scheduled date due to a valid excuse, a second and final opportunity to write the exam will be given.

Note 1: "Long-term absence" refers to absences of more than three consecutive days due to major or chronic physical or mental health conditions, or other extenuating circumstances such as caregiving duties; immediate family illness, injury or death; involvement in an accident; legal proceedings; being a victim of a crime, domestic or intimate partner violence.

Note 2: if you have an **Accessibility Plan** that allows for coursework deferrals or deadline extensions, you must contact your instructor in advance to implement your plan.

Communication:

Primary communication between Instructors and students shall be conducted via the @dal.ca email system. It is your responsibility to frequently (i.e. daily!) check your email.

Announcements are posted on Brightspace. You can adjust your Brightspace settings to receive course notifications.

Email Netiquette:

- Email Mindy for course-admin and lab-related questions; email Nicanor for lecture-related questions.
- We will do our best to respond in a timely manner. However, in an effort to model a healthy work/life balance, please do not expect email responses after 5:00 pm on Monday-Friday, or on weekends.
- Provide an appropriate subject line, provide your first and last name, and include key information to reduce unnecessary back and forth replies.

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Adjusting your Mindset (as you become Capable 2nd Year Biologists):

You are fully capable of succeeding in this course. You would not have gotten here otherwise. With that in mind, we want to provide some advice on expectations:

1) We are training you to become independent thinkers and confident adults. We will talk about cell biology with you for as long as it takes for you to understand concepts, but we cannot 'pre-mark' worksheets or assignments as we need to be fair to the other students in the class. Challenge yourself to think critically, building upon the knowledge you have amassed up to this point and be confident in your preparation when completing assessments. In other words, you can totally do this! 😀

2) Effort-exerted and time-spent does not equate success. This is a frustrating lesson, but it is true. It does not matter if you spend 10 hours on an assignment if you ultimately did it incorrectly. It also does not matter if you spent hours re-writing all your lecture notes if you ultimately did not retain or process any of the content. Work smarter, not longer! (Talk to us if you want to brainstorm study strategies. We want to help!).

Assessment Re-evaluation:

Marks are awarded based on correct responses. If you notice an error in marking (i.e., the rubric is filled out incorrectly, the TA mentioned that you were missing something, but you actually included it, etc.), please notify Mindy and your mark will be adjusted accordingly.

If you have specific and valid concerns that your assignment was marked incorrectly and are requesting a full re-evaluation of an assessment, please note that your mark may stay the same or it may increase/decrease. Requests for re-evaluation must occur within 7 days of releasing the grade, and only those requests with legitimate concerns will be addressed.

Academic Integrity:

We take academic integrity seriously. If there is suspicion of an academic offence, we will engage Dalhousie's academic integrity process and forward the case to a Faculty of Science Academic Integrity Officer. Do not put yourself in a situation where your academic career is in jeopardy.

Contents of the lab assignments, Brightspace quizzes, midterms, lab test, and the final exam are all property of BIOL 2020 and are strictly confidential. You may not share, distribute, or post any of the content from these assessments with anyone, either in-person or online (e.g., Email, WhatsApp, Discord, Chegg, Course Hero, Studocu, etc.)

Lecture and Lab Quizzes: Brightspace quizzes are open book/notes. This means that you are welcome to use our Brightspace resources. However, you are not allowed to access other internet sites (e.g., Chegg, Google, YouTube, etc.) Collaboration during the quizzes is not permitted. By starting the assessment, you are promising that the work submitted is solely of your own efforts.

Lab Flowcharts: Must be completed individually.

Lab Assignments: Must be submitted indivually, however students are encouraged to work together in pairs and similarities or identical phrasing in submission of assignments of people in pairs is acceptable and not considered an academic offence.

Tests and Exam: Closed book. Must be completed individually without collaboration with any other person.

Generative AI and Large Language Models (e.g. ChatGPT): You may use AI-driven tolls to assist your learning, but you many not use them to produce work to be submitted for either formative or summative evaluations.

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Copyright Notice:

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale:

A+	(90-100)	B+	(77-79)	C+	(65-69)	D	(50-54)
A	(85-89)	B	(73-76)	C	(60-64)	F	(< 50)
A-	(80-84)	B-	(70-72)	C-	(55-59)		

Faculty of Science: University Policies and Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

Information: https://www.dal.ca/campus_life/academic-support/accessibility.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

Code: https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness

Statement: http://www.dal.ca/cultureofrespect.html

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Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit or e-mail the Indigenous Student Centre (1321 Edward St) (elders@dal.ca).
Information: https://www.dal.ca/campus_life/communities/indigenous.html

Important Dates in the Academic Year (including add/drop dates)

https://www.dal.ca/academics/important_dates.html

University Grading Practices

https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html

Student Resources and Support

University Policies and Programs

Important Dates in the Academic Year (including add/drop dates): http://www.dal.ca/academics/important_dates.html

Classroom Recording Protocol: https://www.dal.ca/dept/university_secretariat/policies/academic/classroom-recording-protocol.html

Dalhousie Grading Practices Policies: https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html

Grade Appeal Process: https://www.dal.ca/campus_life/academic-support/grades-and-student-records/appealing-a-grade.html

Sexualized Violence Policy: https://www.dal.ca/dept/university_secretariat/policies/health-and-safety/sexualized-violence-policy.html

Scent-Free Program: https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html

Learning and Support Resources

General Academic Support – Advising (Halifax): https://www.dal.ca/campus_life/academic-support/advising.html

Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness.html

On Track (helps you transition into university, and supports you through your first year at Dalhousie and beyond): https://www.dal.ca/campus_life/academic-support/On-track.html

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Indigenous Connection: https://www.dal.ca/about-dal/indigenous-connection.html

Elders-in-Residence (The Elders in Residence program provides students with access to First Nations elders for guidance, counsel, and support. Visit the office in the Indigenous Student Centre or contact the program at elders@dal.ca or 902-494-6803: https://cdn.dal.ca/content/dam/dalhousie/pdf/academics/UG/indigenous-studies/Elder-Protocol-July2018.pdf

Black Student Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre.html

South House Sexual and Gender Resource Centre: https://southhousehalifax.ca/about/

LGBTQ2SIA+ Collaborative: https://www.dal.ca/dept/vpei/edia/education/community-specific-spaces/LGBTQ2SIA-collaborative.html

Dalhousie Libraries: http://libraries.dal.ca/

Copyright Office: https://libraries.dal.ca/services/copyright-office.html

Dalhousie Student Advocacy Services: https://www.dsu.ca/dsas?rq=student%20advocacy

Dalhousie Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Human Rights and Equity Services: https://www.dal.ca/dept/hres.html

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Study Skills/Tutoring: http://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Faculty of Science Advising Support: https://www.dal.ca/faculty/science/current-students/undergrad-students/degree-planning.html

Safety

Biosafety: http://www.dal.ca/dept/safety/programs-services/biosafety.html

Chemical Safety: https://www.dal.ca/dept/safety/programs-services/chemical-safety.html