

TIMETABLE - WINTER 2024
Instructors:

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Teaching Assistant: Robert Rizk, robert.rizk2@mail.mcgill.ca
Day, Time & Location: M / W / F; 08:35 AM – 09:25 AM; McIntyre Medical Building, Room 1034.

Date			Lecture Title	Lecture	Instructor
Jan.	05	F	Intro, Membrane Structure and Components	01	MD
	08	M	Lipids and Protein Topology	02	MD
	10	W	Analysis of Membrane Components - Mandatory attendance	03	MD
	12	F	Analysis of Membrane Components - Mandatory attendance	04	MD
	15	M	Analysis of Membrane Components	05	MD
	17	W	Model Membranes: Membrane Solubilization and Reconstitution	06	MD
	19	F	Membrane Trafficking Mechanisms: Endocytosis	07	MD
	22	M	Membrane Trafficking Mechanisms: Endocytosis	08	MD
	24	W	Fundamentals of Membrane Transport 1st Quiz (12%) Wednesday 6:30 - 7:30 PM (Lectures 1 – 8), McMed 1034	09	MD
	26	F	Trafficking and Cholesterol Homeostasis - Mandatory attendance	10	MD
	29	M	Trafficking and Cholesterol Homeostasis - Mandatory attendance	11	MD
31	W	Carriers and Channels	12	MD	
Feb.	02	F	Carriers and Channels	13	MD
	05	M	Signaling Complexes in the Dendritic Spine – Deadline, topic for the Oral Presentation	14	MD
	07	W	Problem-solving - Mandatory attendance	15	MD
	09	F	Pre-midterm Tutorial	16	MD/T.A.
	12	M	2nd Quiz (18%) Friday 8:35 AM - 9:25 AM, McMed 1034 (Lectures 1- 16)	no class	
	14	W	Background Lecture – Molecular-Biological Methods	17	NZ
	16	F	Heterotrimeric G-protein Signaling (not recorded)	18	DR
	19	M	Heterotrimeric G-protein Signaling (not recorded)	19	DR
	21	W	Heterotrimeric G-protein Signaling (not recorded)	20	DR
	23	F	Tyrosine Kinases and Small G-protein Signaling (not recorded)	21	NLV
	26	M	Tyrosine Kinases and Small G-protein Signaling (not recorded)	22	NLV
28	W	Tyrosine Kinases and Small G-protein Signaling (not recorded)	23	NLV	
Mar	01	F	Tyrosine Kinases and Small G-protein Signaling (not recorded)	24	NLV
	4 - 8		Study break - No class		
	11	M	PI Signaling - Mandatory attendance	25	CA
	13	W	PI Signaling	26	CA
	15	F	PI Signaling Deadline to submit questions for Orals	27	CA
	18	M	PI Signaling - Mandatory attendance	28	CA
	20	W	Cell-Matrix Interactions and Signaling (not recorded)	29	DR
	22	F	Cell-Matrix Interactions and Signaling (not recorded)	30	DR
	25	M	Oral Presentations (not recorded)	31	MD
	27	W	Oral Presentations (not recorded)	32	MD
	29	F	Good Friday - No class		
Apr	1	M	Easter Monday - No class		
	3	W	Oral Presentations (not recorded)	33	DR
	5	F	Oral Presentations (not recorded)	34	NLV
	8	M	Oral Presentations (not recorded)	35	CA
	10	W	Pre-final Tutorial (not recorded)	36	NLV/CA/DR
	11	TH	(Monday Schedule) - no class OR Oral Presentations (if required)		
	15-30	TBD	FINAL EXAM (32%) (Final exam covers lectures 17-30, 36)		

Pre-requisites

BIOC 212, ANAT 262; one of PHGY 201, PHGY 209 or BIOL 205; one of BIOC 312 or ANAT 365; and BIOC 311 or permission of instructors. **RESTRICTIONS:** Students with credit for BIOC 458 may not take ANAT 458, and vice versa.

Course Description

The course presents an integrated treatment of the properties of biological membranes and of intracellular signaling, including the major role that membranes play in transducing and integrating cellular regulatory signals. Biological membrane organization and dynamics: membrane transport; membrane receptors and their associated effectors; mechanisms of regulation of cell growth, morphology, differentiation and death.

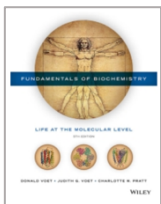
Learning Outcomes

- **Theoretical Content** – Biophysics and analysis of membrane components; membrane-membrane interactions; channels and carriers; extracellular matrix; Small G-proteins and intracellular trafficking; signaling via GPCR and phosphatidylinositol.
- **Critical Thinking** - Solve problems related to membranes and signaling
- **Independent Learning** - Independently understand concepts related to course material, but not explained in class.
- **Communication** - Communicate science to peers
- **Team Working** - Work with peers from in an interdisciplinary environment

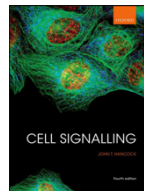
Recommended (not mandatory) Textbooks

Older versions are acceptable surrogates.

Textbooks are available through McGill's *Le James Bookstore*



Voet D., Voet J. and Pratt S. (2016)
Fundamentals of Biochemistry, 5th Ed.,
digital or print (ISBN 978-1-118-91846-3)



Hancock J. T. (2016)
Cell Signalling, 4th Ed.,
digital or print (ISBN 978-0-19-252958-9)

Instructional Methods in this Course

- Interactive lectures. Include theoretical content, in-class exercise and problem-based learning.
- The instructional approach is based on student **attendance** and **active participation to exercises**.



TurningPoint

- **Polling:** Students are invited to install the Turning Point Cloud polling application (<https://www.mcgill.ca/polling/>) on their mobile device ahead of classes.

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Evaluation Scheme

- **10 % Participation to in-class problem solving** (lectures #1-15)
- **12 % Quiz #1*** (lectures # 1-8), [Lockdown browser](#), 45 min (+ 5 min grace)
- **18 % Quiz #2*** (covers lectures #1-16), [Lockdown browser](#), 45 min (+ 5 min grace)
- **20 % Oral** (or video) presentation
- **8 % Mini-quizzes** on oral/video presentations (online, via MyCourses), 15 min (+ 5 min grace)
- **32 % Final exam*** (covers lectures #16-38 inclusive), 3 h, in-person.

* SAA students will get accommodated upon signing up with SAA a minimum of 14 days prior to the start of an assessment. SAA students must sign up here: <https://students.accessibility.mcgill.ca/ClockWork/user/test/default.aspx>. SAA determines the type of accommodation.

- Assessments held during the regular semester time are managed by Course Coordinators, while those held during the Finals are managed centrally by Exam Center. Hence students must send their accommodation requests to the right authority.
- A deferred quiz or exam is worth the same as a regular quiz or exam. The supplemental is worth 100%.
- *Unless explicitly mentioned otherwise by the Instructor, Quizzes and Final exams are **INDIVIDUAL** assessments. Hence, seeking help from a friend is cheating, as stated in the Code of Student Conduct (Article 17).*
- *Assessments may be subjected to text-matching in accordance with the Policy on Text-Matching Software. Suspected plagiarism will be systematically reported to the Disciplinary Officer of the Faculty of Science.*
- **Language:** *Les étudiants peuvent soumettre en anglais ou en français tout travail écrit destiné à l'évaluation.*
In accordance with McGill University's Charter of Students' Rights, students have the right to submit in English or in French any written work that is to be graded (except in courses where knowledge of a language is one of the objectives of the course).
- *In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.*

Medical Notes

If you miss writing a quiz, you **MUST BRING** a doctor's note to the main office, room 905, McIntyre Building within 1 WEEK of the assessment date. In this case, a makeup quiz will be scheduled. If a legitimate doctor's note is not provided, you will receive a zero on the quiz. Students unable to write the Final must contact the Exam Center and register for a deferred Final (<https://www.mcgill.ca/exams/dates/supdefer>).

Procedure for Challenging Grades

1. Politely ask for explanations

Students have the right to seek additional feedback on their quiz grades **without any penalty**.

However, students and graders alike have the right to be treated with dignity and respect. Hence, students may **respectfully** email graders to get further explanations of their mistakes. McGill University being a safe place to study and work, any verbal, written and/or physical violence will NOT be tolerated and immediately reported to the Disciplinary Officer (<https://www.mcgill.ca/medhealthsci-respectful-environments/about>).

Hint: *If you feel angry while writing an email, it may be wiser to sleep on it and send that email on a calmer day.*

Etiquette for writing professional emails: https://www.mcgill.ca/onboardingcentral/files/onboardingcentral/student_email_etiquette_tips.pdf

2. Request a re-read

a) In-semester quizzes

After getting explanations of their mistakes, students who think the grader did not follow the quiz rubric can officially request a Quiz re-read by emailing the Course Coordinator (maxime.denis@mcgill.ca). Requests for Quiz re-reads must be received by the Coordinator BEFORE Final Exams begin. Any request past that date will be declined. Requests for quiz rereads will be examined within 10 business days. A re-read aims to determine whether the grader has misinterpreted the grading rubric.

***The Coordinator may impose a 1% penalty on any marking challenge that is not based on sound academic grounds.**

Examples: Should the re-read: 1) be in favor of the student, the student gets the disputed marks back.

2) NOT be in favor of the student, a 1% penalty is imposed on the total course grade.

b) Rereads of the **Final Exams** are centrally managed: <https://www.mcgill.ca/student-records/reread>

Course Grades: The department of Biochemistry does **NOT** revise/upgrade marks except on sound academic grounds. Once computed, the marks in this course will **NOT** be altered/increased. Decimal points will be “rounded of” as follows: if the final aggregate mark is computed to be 79.5%, the mark will be reported as 80% (an A-); a final aggregate mark of 79.4% will be reported as 79% (a B+). These marks are **FINAL and NON-NEGOTIABLE**. Any unsupported request to increase marks will be systematically turned down.

Oral presentations

1. In teams of 3-4 students (team size varies upon enrollment), choose a topic among:

M. Denis/N. Zeytuni	Aquaporin 4, Caveolin1, ABCA1, S1P (SKI-1), ARH, Perilipin-1, SR-B1 in Covid, Hepatitis C, SARS-CoV2 Spike Protein, Hyaluronidase-1, S2P in A β conversion, SERT, "Oncosomes"
N. Lamarche-Vane	Insulin receptor, EGFR, RhoA, p190RhoGAP, DOCK180, GSK-3, ERK1/2, Smad4, TGF β , DLL4, WASP
D. Reinhardt	Cannabinoid receptor, μ -opioid receptors, Integrin β 1, Integrin β 4, laminin 332, collagen VII, Focal adhesion kinase, dystroglycan, DDR receptor, CD44.
C. Autexier	phospholipase C (PLC)-gamma 1, atypical protein kinase C (PKC) zeta and/or iota, Class III PI3K Vps34p, SH2 domain-containing inositol phosphatase (SHIP) 1 and/or 2, scaffold protein Par6

2. Get your choice approved by the instructor before **February 05**.

3. Prepare a 15-minutes oral (or video) presentation that covers:

- Structure and physiological function(s) of the normal protein
- Disease(s) associated with the protein
- Propose one experimental approach to study its function in vitro
⇒ (i.e. application of concepts and techniques learnt in class)
- Future directions

4. Present your work in front of class – Answer questions (5 min)

Useful resources

- **Student Rights and Responsibilities**

<https://www.mcgill.ca/students/srr/academicrights>

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see <http://www.mcgill.ca/students/srr/honest/> for more information).

- **McGill Academic Calendar** (add/drop, withdrawal and other deadlines)

<https://www.mcgill.ca/importantdates/key-dates>

- **Time management**

<https://www.mcgill.ca/access-achieve/learner-support/time-management-0>

- **Stress management**

<https://www.mcgill.ca/thewelloffice/isonspotscsd/wellness-support/curriculum/take-home-messages/stress-management-tips>

- **for Students Accessibility and Achievement office (SAA)**

<https://www.mcgill.ca/access-achieve/>

- **Health and Wellness Resources at McGill**

All of our health and wellness resources have been integrated into a single Student Wellness Hub, your one-stop shop for everything related to your physical and mental health. If you need to access services or get more information, visit the Virtual Hub at www.mcgill.ca/wellness-hub or drop by the Brown Student Services Building (downtown) or Centennial Centre (Macdonald Campus). Within your faculty, you can also connect with your Local Wellness Advisor (to make an appointment, visit <https://mcgill.ca/lwa>).