

BIOCHEMISTRY/ANATOMY 212
MOLECULAR MECHANISM OF CELL FUNCTION
TIMETABLE - WINTER 2023

Lecturers:

Dr. Maria Vera Ugalde (Co-Coordinator), McIntyre Building, Room 915C, Tel: 514-398-5226, maria.veraugalde@mcgill.ca

Dr. Robert Scott Kiss (Co-Coordinator), EM1.2220 MUHC-RI, Tel:514-934-1934 ext. 76410, robert.kiss@mcgill.ca

Dr. D. Reinhardt, Strathcona Anatomy & Dentist Bldg., Room 1/14, Tel: 514-398-4243, dieter.reinhardt@mcgill.ca

Dr. Mark Fabian, Lady Davis Institute, Room E-438, Tel: 514-398-1521, marc.fabian@mcgill.ca

Dr. William Pastor, McIntyre Building, Room 900A, Tel: 514-398-8350, william.pastor@mcgill.ca

Location: McIntyre Medical Building, Room 522. **Mondays (M), Wednesdays (W) & Fridays (F)** from **10:35am-11:25am**

Prerequisite: BIOL 200 **Restrictions:** Not open to students who have taken or are taking BIOL 201

TAs: Armin Moalla: armin.moalla@mail.mcgill.ca; Emma Kelly: emma.kelly@mail.mcgill.ca; Yunxiang Yang:

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Date	Day	Lecture Title	Lecture	Lecturer
Jan. 04	W	Introduction to the course content	1	MVU/RSK
06	F	Thermodynamics and Equilibrium (AM and YY)	2	MVU
09	M	Protein Folding in the Cell I (EK and AM)	3	MVU
11	W	Protein Folding in the Cell II (EK and AM)	4	MVU
13	F	Protein Folding in the Cell III (EK and AM)	5	MVU
16	M	Protein Folding in the Cell IV (EK and AM)	6	MVU
18	W	Membrane Proteins I (EK and AM)	7	MVU
20	F	Membrane Proteins II (EK and AM)	8	MVU
23	M	Membrane Proteins III (EK and AM)	9	MVU
25	W	Membrane Proteins IV (EK and AM)	10	MVU
27	F	Intracellular sorting I (EK and AM)	11	MVU
30	M	Intracellular sorting II (EK and AM)	12	MVU
Feb. 01	W	Intracellular sorting III (EK and AM)	13	MVU
03	F	Intracellular sorting IV (EK and AM)	14	MVU
06	M	Cell-Interactions and Extracellular Matrix I (AM and YY)	15	DR
08	W	Cell-Interactions and Extracellular Matrix II (AM and YY)	16	DR
10	F	Cell-Interactions and Extracellular Matrix III (AM and YY)	17	DR
13	M	Cell-Interactions and Extracellular Matrix IV (AM and YY)	18	DR
15	W	Cell-Interactions and Extracellular Matrix V (AM and YY)	19	DR
17	F	Midterm prep	20	TAs
20	M	MIDTERM EXAM (Lectures 2-19) 6:30 - 8:30 PM		
22	W	Cell communication: Ligands and Receptors (AM and EK)	21	RSK
24	F	Introduction to Metabolism (YY and EK)	22	RSK
Feb 27 – Mar 3 - STUDY BREAK				
Mar. 06	M	Organelle Functions and Metabolism I (YY and EK)	23	RSK
08	W	Organelle Functions and Metabolism II (YY and EK)	24	RSK
10	F	Organelle Functions and Metabolism III (YY and EK)	25	RSK
13	M	Organelle Functions and Metabolism IV (YY and EK)	26	RSK
15	W	Cell Cycle I (YY and EK)	27	RSK
17	F	Cell Cycle II (YY and EK)	28	RSK
20	M	Cell Cycle III (YY and EK)	29	RSK
22	W	Cancer I (YY and AM)	30	Mark Fabian
24	F	Cancer II (YY and AM)	31	Mark Fabian
27	M	Cancer III (YY and AM)	32	Mark Fabian
29	W	Cancer IV (YY and AM)	33	Mark Fabian
31	F	Model Organisms & development I (AM and YY)	35	Will Pastor
Apr 03	M	Model Organisms & development II (AM and YY)	36	Will Pastor
05	W	Model Organisms & development III (AM and YY)	37	Will Pastor
07	F07	No class – prepare for FINAL (Date TBD, Apr 14-28)	38	TAs

Midterm Examination: Lectures 2 to 19 (inclusive)

Final Examination: Lectures 20 to 37 (inclusive)

MARKING SYSTEM: Mid-term, 50%; Final Examination, 50%

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Suggested Reading

- **Molecular Biology of the Cell; Bruce Alberts, Rebecca Heald, Alexander Johnson, David Morgan, Martin Raff, Keith Roberts, Peter Walter. Pub. Date: 2022 Publisher: Norton and Company.; Edition Number: 7**
- Molecular Cell Biology; Harvey Lodish, Paul Matsudaira, Arnold Berk, S. Lawrence Zipursky, Matthew P. Scott; ISBN: 0716743663; Format: Hardcover, 973pp; Pub. Date: 2016 Publisher: W. H. Freeman Company; Edition Number: 9
- Smart Biology _ Lecture1: From Atoms to Cells
- Professors will recommend additional readings. They will be indicated in the lecture content.

Course Description

Throughout this introductory course to the molecular mechanisms of cell functions, you will learn fundamental aspects of protein biochemistry and cell biology. Emphasis is made on proteins because they perform a diverse range of cellular functions and provide structure to the cell. Learning about proteins will help to understand the internal organization of cells in compartments and their communication, the communication of cells with other cells and the extracellular environment, the mitochondrial production of metabolic energy, and the regulation of cell division. These concepts will be used to introduce multicellular organism development and how the misregulation of molecular events can lead to disease, using cancer as an example.

Instructional Methods in this Course

- In-person lectures are recorded* and available on MyCourses.

* © Instructor generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow-up by the University under the Code of Student Conduct and Disciplinary Procedures.

- In-person review sessions (by Teaching Assistants).
- The instructional approach is based on student **attendance** and **participation**.
- Post your questions on the discussion board to help solve your classmates' doubts, and engage them, TAs, and Professors in the discussion about course subjects. Your post also allows us to identify concepts that are not clear and improve the course in the upcoming year.

Evaluation (1 Midterm 50%; 1 Final 50%)

50% Midterm

The midterm exam is designed to be answered in 3h - or less – and is administered **in-person**.

If you miss writing the midterm exam, you MUST BRING a medical note to the main office, room 905, McIntyre Medical Sciences Building within 1 WEEK of the exam date. In this case, a make-up midterm will be scheduled within the 2 weeks from the midterm date. If a legitimate (please make note: the note should provide a VALID medical condition) doctor's note is not provided, students will receive zero.

50% Final

The Final exam is designed to be answered in 3h - or less – and is administered **in-person**.

Students unable to write the Final exam must contact the Exam Center and register for a deferred exam.

- *OSD students must register with the OSD office for accommodations (<https://www.mcgill.ca/osd/>).*
- *Unless otherwise indicated by the instructor, **all assessments must be written INDIVIDUALLY**. The Midterm and Final exams are not meant to be collaborative work. Answers will be vetted for cheating and/or plagiarism using a text-matching software. Any suspicious case will be submitted to the Faculty of Science Disciplinary Officer.*
- *In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.*
- *In accord 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).*

Grading:

The department of Biochemistry will **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**.

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/study/2021-2022/important-dates>