

Advanced Topics in Immunology CMMB/MDSC 567

Instructors:

Course Coordinator

Derek McKay (dmckay@ucalgary.ca)

Course Instructors

Kamala Patel (kpatel@ucalgary.ca)

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Robert Newton (rnewton@ucalgary.ca)

Pierre-Yves von der Weid (vonderwe@ucalgary.ca)

Office Hours/Policy on Answering Student Emails

Typically, this is a small class, queries addressed *ad hoc* as they arise (no specified office hours)

Time and Location:

Winter Semester

Tuesdays and Thursdays

3:30-4:45

Science Theatres Room 027

Prerequisite/Co-Requisite:

Introductory Immunology (CMMB527 or MDSC 321)

Course Description:

This is an advanced course catering to students with a clear interest in immunology, and those with research interests. The material presented builds on the foundation of basic immunological principles that students will have obtained in CMMB 527/MDSC 321 or an equivalent course. The course is modular and can change/rotate annually. This year instruction is provided by five experts in immunology under the main topics of:

- (1) innate immunity and immune cell trafficking;
- (2) structure and function of the lymphatic system;
- (3) Inflammation and therapeutics in the airways;
- (4) mucosal immunity, inflammation and disease in the GI tract.

Global Objectives

This course is designed for motivated students who can work well independently and in groups, with the central goal of illuminating current immunological concepts as they relate to

homeostasis, infection and disease. Students are introduced to a variety of teaching styles (lectures, small group discussions and problem-based learning) and, similarly, a variety of evaluation tools are employed (in class tests, in class participation, form presentations, critique of the scientific literature, composition of a critical essay). The student will gain a much fuller understanding of the complexity of immunology – signals, cell-cell communication, coordinated responses, immunopathological mechanism, interaction of the immune system with other systems in the body – and how this advances our knowledge of the organism and health and disease.

Learning Objectives

By the end of this course, students will be able to:

- Better critique the scientific literature
- Apply problem-based learning to a biomedical question and as a learning tool
- Understand the complexity of immune cells recruitment and trafficking
- Appreciate the active role that lymphatic vessels play in the control of homeostasis and disease
- Understand steroid intracellular signaling and gene regulation as they relate to airway inflammation
- Appreciate the interplay between the mucosal immune system in the gut and the commensal microbiota in the control of intestinal function in health and disease

Required Textbooks

None

Recommended Textbooks/Readings

None.

Evaluation

The University policy on grading and related matters is described in section F.2 of the 2018-2019 Calendar.

In determining the overall grade in the course, the following weights will be used:

Dr. McKay:	25% (2-4 page insightful report (18%): in class participation (7%))
Drs. Von der Weid & Liao:	25% (presentation of a research article (12.5%), written abstracts (6.5%), in class participation (6.5%))
Dr. Patel:	25% (In class discussion & participation (10%), test (15%))
Dr. Newton:	25% (Essay (15%), test (7.5%), in class participation (2.5%))

There will not be a Registrar-scheduled final examination.

Students who do not complete all major components of the course will be considered as not having completed the course; this will be reflected on the student's official transcript as 'Incomplete'. Major components of the course include in class participation and written assignments. In the absence of medical or other documented reasons, the instructor reserves the

right to award an ‘Incomplete’.”

A Note regarding Written Assignments:

Writing skills are important to academic study in all disciplines. In keeping with the University of Calgary’s emphasis on the importance of academic writing in student assignments (section E.2 of 2018-19 Calendar), writing is emphasized, and the grading thereof in determining a student’s mark in this course. The Bachelor of Health Sciences values excellence in writing. Competence in writing entails skills in crafting logical, clear, coherent, non-redundant sentences, paragraphs and broader arguments, as well as skills with the mechanics of writing (grammar, spelling, punctuation). The University of Calgary offers a number of instructional services through the Students’ Success Centre’s Writing Support Services (<http://www.ucalgary.ca/writingsupport/>) for students seeking feedback on assignments or seeking to improve their general writing skills. Students are **strongly encouraged** to take advantage of these programs.

Grading Scheme:

A+ 97-100%	B+ 80-84%	C+ 65-69%	D+ 54-56%
A 90-96%	B 75-79%	C 60-64%	D 50-53%
A- 85-89%	B- 70-74%	C- 57-59%	F 0-49%

Missed Components of Term Work:

At each instructor’s discretion, late assignments will not be accepted and will automatically receive a mark of zero, (or students will lose 5% per day late past the deadline for all assignments. In this case, assignments will NOT be accepted more than 72 hours after the posted deadline and students failing to submit any assignment within this time frame will receive a mark of zero). Students who miss a quiz will receive a mark of zero unless the instructor has been previously notified. There will be NO exceptions to this policy.

It is the agreement of all Faculty and Staff involved in MDSC567 that extensions will NOT be granted on any assignment or quizzes. The only exceptions to this are those in keeping with the University Calendar (illness, religious conviction, or severe domestic affliction) that are received in writing and with supporting documentation. Please be advised that students should notify the instructor before the assignment deadline to discuss. Please note that while absences are permitted for religious reasons, students are responsible for providing advance notice and adhering to other guidelines on this matter, as outlined in the University Calendar (<https://www.ucalgary.ca/pubs/calendar/current/e-4.html>).

Brightspace by Desire2Learn (D2L)

Brightspace (by D2L) is located on the University of Calgary server and may be used for communication with students. **It is the student’s responsibility to ensure that they receive all posted communications and documents and that they receive emails sent by instructors or fellow students through D2L.** Only your @ucalgary.ca email address may be linked to D2L. Please ensure that you are regularly checking your @ucalgary.ca account.

If you need help accessing or using D2L, please visit the Desire2Learn resource page for students: <http://elearn.ucalgary.ca/d2l-student/>.

Policies Governing the Course:

Attendance

Full attendance is expected and any absence should be communicated to Dr. McKay the course coordinator. Absence from 3 classes precludes the possibility of attaining an A+ grade, because of the importance of class participation to the individual student and the group activities.

Conduct During Lectures

Students are expected to conduct themselves in a mature and courteous manner during ALL lectures. Students are expected to frame their comments and questions to lecturers in respectful and appropriate language, always maintaining sensitivity towards the topic.

Students are expected to take notes during each session and should not rely solely on handout material supplied by the instructors.

Electronic Devices

The Bachelor of Health Sciences program aims to create a supportive and respectful learning environment for all students. Research studies have found that student use of electronic devices (laptops, tablets, etc.) in the classroom negatively affects the learning of both the user and those sitting nearby. Inappropriate use of laptops is also disruptive to your fellow classmates and disrespectful to the lecturer. The use of laptops and other electronic note-taking devices is permitted; however, their use in the classroom should be for course-related work/note-taking only. Please do **NOT surf the web, check email or do other unrelated work**. Students who use their laptops inappropriately or are otherwise disruptive during lectures will be asked to leave.

Cell phones (or similar devices) should **be turned off** (not merely silent) upon entering the classroom. Sending/receiving text messages or leaving the class to take calls is disruptive to the entire class and will not be tolerated unless absolutely necessary. Students who disregard this rule during lectures or tutorials will be asked to leave. These items are not permitted under any circumstance during exams/quizzes, etc.

Copyright

It is the responsibility of students and professors to ensure that materials they post or distribute to others comply with the Copyright Act and the University's Fair Dealing Guidance for Students (library.ucalgary.ca/files/library/guidance_for_students.pdf). Further information for students is available on the Copyright Office web page (<http://library.ucalgary.ca/copyright>).

A Note Regarding Instructor Intellectual Property

Generally speaking, course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the professor(s). These materials may **NOT** be reproduced, redistributed or copied without the explicit consent of the professor. **The posting of course materials to third party websites such as note-sharing sites without permission is prohibited.** Sharing of extracts

of these course materials with other students enrolled in the course **at the same time** may be allowed under fair dealing.

Academic Accommodations Based on Disability or Medical Condition

It is the student's responsibility to register with Student Accessibility Services to be eligible for formal academic accommodation in accordance with the Procedure for Accommodations for Students with Disabilities (https://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf). If you are a student who may require academic accommodation and have not registered with Student Accessibility Services, please contact their office at (403) 220-8237; <http://www.ucalgary.ca/access/>. Students will be provided with all necessary accommodations to ensure equal opportunity to succeed in this course. Please provide the instructor your accommodation letter from Student Accessibility Services within 14 days after the start of this course so that all needed arrangements for exams and assignments can be made.

Accommodations on Protected Grounds other than Disability

Students who require an accommodation in relation to their coursework based on a protected ground other than disability, should communicate this need, preferably in writing, to the designated BHSc program contact, Mrs. Jennifer Logan (jljlogan@ucalgary), or to Dr. Ebba Kurz, Associate Dean, Undergraduate Health and Science Education, Cumming School of Medicine. Students who require an accommodation unrelated to their coursework or the requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Vice-Provost (Student Experience). For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/.

Academic Misconduct

The University of Calgary is committed to the highest standards of academic integrity and honesty. The University of Calgary has created rules to govern all its members regarding the creation of knowledge and the demonstration of knowledge having been learned. These rules are contained principally in Sections J to L of the *University of Calgary Calendar*. Students are expected to be familiar with these standards and to uphold the policies of the University in this respect. The Calendar also stipulates the penalties for violating these rules. Please know that the University and the Cumming School of Medicine take these rules seriously. **All incidences of academic dishonesty in this course, such as cheating and plagiarism, will be reported to the Associate Dean for investigation;** infractions will be noted on the record of a student found to be guilty.

Recording of Lectures

Audio or video recording of lectures is prohibited except where explicit permission has been received from the instructor.

Other Important Information

Freedom of Information and Protection of Privacy Act

This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP); students should identify themselves on written assignments (exams and term work) by their name and ID number on the front page and ID on each subsequent page. Work assigned to you by your course instructor will remain confidential unless otherwise stated before submission. The assignment cannot be returned to anyone else without your expressed permission to the instructor. Grades will be made available on an individual basis and students will not have access to other students' grades without expressed consent. Similarly, any information about yourself that you share with your course instructor will not be given to anyone else without your permission. See <http://www.ucalgary.ca/policies/files/policies/privacy-policy-2011.pdf> for more information.

Appeals

If there is a concern with the course, academic matter or a grade, first communicate with the instructor. If these concerns cannot be resolved, students can proceed with an academic appeal, as per Section I of the University Calendar. Students must follow the official reappraisal/appeal process and may contact the Student Ombuds' Office (<http://www.ucalgary.ca/ombuds>) for assistance with this and with any other academic concerns, including academic and non-academic misconduct. Students should be aware that concerns about graded term work may only be initiated **within 15 days** of first being notified of the grade.

Resources for Support of Student Learning, Success, Safety and Wellness

Student Success Centre	http://www.ucalgary.ca/ssc/
Student Wellness Centre	http://www.ucalgary.ca/wellnesscentre/
Distress Centre	http://www.distresscentre.com/
Library Resources	http://library.ucalgary.ca

Wellness and Mental Health Resources

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370 MacEwan Student Centre, <https://www.ucalgary.ca/wellnesscentre/services/mental-health-services>) and the Campus Mental Health Strategy (<http://www.ucalgary.ca/mentalhealth/>).

Student Ombuds' Office

The Student Ombuds' Office supports and provides a safe, neutral space for students. For more information, please visit www.ucalgary.ca/ombuds/ or email ombuds@ucalgary.ca

Student Union (SU) Information

The SU Vice-President Academic can be reached at (403) 220-3911 or suvpaca@ucalgary.ca; the SU representatives for the Cumming School of Medicine can be reached at medrep1@su.ucalgary.ca or medrep2@su.ucalgary.ca.

Emergency Evacuation/Assembly Points

Assembly points for emergencies have been identified across campus. Assembly points are designed to establish a location for information updates from the emergency responders to the evacuees; and from the evacuated population to the emergency responders. The primary assembly point for the Science Theatres (ST) is the Professional Faculties Building – Food Court. For more information, see the University of Calgary's Emergency Management website: <http://www.ucalgary.ca/emergencyplan/assemblypoints>.

Safewalk

Campus security will escort individuals, day or night, anywhere on campus (including McMahon Stadium, Health Sciences Centre, Student Family Housing, the Alberta Children's Hospital and the University LRT station). Call 403-220-5333 or visit <http://www.ucalgary.ca/security/safewalk>. Use any campus phone, emergency phone or the yellow phone located at most parking lot pay booths. Please ensure your personal safety by taking advantage of this service.

Class Schedule

Please see accompanying schedule.

WINTER 2019

CMMB 567: Advanced Topics In Immunology [Tuesday and Thursday 15:30-16:45] [Room : Science Theatres (ST) 027]

Date	Session	Presentation	Lecturer	Evaluation
10th Jan	Thurs	1 Course introduction and overview	D. McKay	
<i>INNATE IMMUNITY and CELL RECRUITMENT</i>				
15th Jan	Tues	2 Hallmark features of inflammation	K. Patel	In class discussion and participation (10%) In class test (15%)
17th Jan	Thurs	3 Recruitment of leukocytes	K. Patel	
22nd Jan	Tues	4 Cytokines and chemokines	K. Patel	
24th Jan	Thurs	5 Lipid mediators of inflammation	K. Patel	
29th Jan	Tues	6 Discussion and debate -topic tbd	K. Patel	
31st Jan	Thurs	7 In class test	K. Patel	
<i>AIRWAY INFLAMMATION</i>				
5th Feb	Tues	8 Introduction. Basic airways physiology and asthma	R. Newton	Presentation + participation (2.5%) [Written test (7.5%); Essay focused on material from sessions 3 - 5 (15%)
7th Feb	Thurs	9 Molecular immunology and asthma therapeutics	R. Newton	
12th Feb	Tues	10 Mechanisms of glucocorticoid action	R. Newton	
14th Feb	Thurs	11 Student presentations: journal club / discussion	R. Newton	
19th Feb	Tues	Spring break -no class		
21st Feb	Thurs	Spring break - no class		
26th Feb	Tues	12 Student presentations: journal club / discussion	R. Newton	
28th Feb	Thurs	13 Assessment (30 mins written test). Final discussion on essay topic	R. Newton	
<i>LYMPH NODE STRUCTURE, MUCOSA ASSOCIATED IMMUNE CELLS AND LYMPHATICS</i>				
5th Mar	Tues	14 The Lymphatic System: structure and function	P-Y. von der Weid / S. Liao	Student presentation of a research article chosen from a proposed selection (12.5%)
7th Mar	Thurs	15 Lymphatic and Immune Regulation	P-Y. von der Weid / S. Liao	
12th Mar	Tues	16 Journal Club - Student presentations	P-Y. von der Weid / S. Liao	Written abstracts (6.25%) Questions and participation (6.25%)
14th Mar	Thurs	17 Journal Club - Student presentations	P-Y. von der Weid / S. Liao	
19th Mar	Tues	18 Journal Club - Student presentations	P-Y. von der Weid / S. Liao	
21st Mar	Thurs	19 Journal Club - Student presentations	P-Y. von der Weid / S. Liao	
<i>MUCOSAL IMMUNITY, INFLAMMATION & INTESTINAL DISEASE (problem based learning approach)</i>				
26th Mar	Tues	20 Gut form & function - mucosal immunity	D. McKay	Two-4 page report on role of a defined immune cell in IBD (18%)
28th Mar	Thurs	21 Immunology of helminth infections at mucosal surfaces	D. McKay	
2nd April	Tues	22 Inflammatory bowel disease - immunity	D. McKay	In class participation (7%)
4th April	Thurs	23 Inflammatory bowel disease - neuroimmunity	D. McKay	
9th April	Tues	24 Inflammatory bowel disease - microbiota	D. McKay	
11th April	Thurs	25 An integrated response to immunity	D. McKay	