LMP436H1
Microbial Pathogenesis

Overview
The course focuses on host microbial interaction and analyzes the mechanisms underlying innate immune defence against pathogens. The course will alternate between general lectures and article analysis.

Goals
Understanding host defense against microbial infection, at the molecular, cellular and tissular level.

Exploring pathogenesis mechanisms and how microbes subvert host functions to establish virulence and persistence.

Providing an in-depth analysis of host innate immune defense programs, including Toll-like receptors, Nod-like receptors and Rig-I-like receptors.

Revealing how evolutionary conserved stress response pathways contribute to host defense against infection

Defining host-microbial interactions in other model organisms (such as Drosophila, C. elegans) to reveal universal versus specific concepts.

Challenging our critical thinking through group analysis of important recent articles in the field, with a focus on the intestinal epithelium.

Requirements
Students need to have a general knowledge of microbiology (e.g., bacterial cell wall composition, viral replication), as well as cell biology (e.g., signal transduction pathways such as MAP kinases or NF-κB). Familiarity with the main concepts of immunology is a plus but is not required. Course requirements are BCH210H1/BCH242Y1, IMM334Y1/MGY377H1.

Materials
PowerPoint slides and articles will be posted on Quercus.

Milestones
1
General concepts of microbial pathogenesis, microbial subversion of host cellular functions.

2
In depth analysis of innate immunity in mammals.

3
Exploring innate immunity in multiple hosts and identification of general concepts.
Evaluation

Assignments (Article Analysis) 16%
Midterm Feb 24th, 2021 (Lectures 1-5) 38%
Exam April TBA (Cumulative) 46%

Article Analysis Assignments

Please send an electronic copy to the TA by the beginning of class at 1PM. The assignments should be maximum of 1.5 pages, single-spaced (do not go over the page limit). Include:

▪ 2 to 4-sentence summary of the paper focusing on the most important discoveries (do not summarize the abstract)
▪ Background research on the authors
▪ What the paper builds on (e.g. what was the previous knowledge and state of the field before this paper?)
▪ The major output/contribution this paper provides to the future of the field (e.g. clinical, therapeutic advancements etc.)
▪ Pick one result/figure that you deem to be the most elegant/creative/original, and another result/figure that is flawed/a limitation, and explain your choices

Midterm Feb 24th, 2021

Midterm will consist of short answer questions that will cover lectures 1 - 5.

Presentations

During each article analysis lecture students will be divided into small groups and will be assigned figure/panel from the paper. Each group will discuss the figure/panel and present their findings to the class.

Exam April TBA (2 hours)

The exam will be held during the exam period (April 2021). The exam will consist of short answer questions that will cover lectures 1-12 (the exam is CUMULATIVE).

Missed Midterm / Assignments

If there are extenuating circumstances (illness, death in family) that prevent you from completing an assignment on time you must email the instructor as soon as possible, preferably BEFORE the deadline and NO LATER than one week after the due date. Requests for extensions will be granted if there are legitimate medical or compassionate grounds only. The official UofT medical form, which can be found here: www.illnessverification.utoronto.ca must be submitted.

Re-grading

If you wish to have your midterm/assignment re-graded you must arrange a meeting with the instructor within one week after the work has been returned to discuss in detail the reasons for requesting a re-grade.

Academic integrity

Academic integrity is fundamental to learning at the University of Toronto.
Please familiarize yourself with the University of Toronto’s *Code of Behaviour on Academic Matters*
http://www.governingcouncil.utoronto.ca/policies/behaveac.htm

University of Toronto treats cases of academic misconduct very seriously. All suspected cases of academic dishonesty will be investigated following the procedures outlined in the *Code*. The consequences for academic misconduct can be severe, including a failure in the course and a notation on your transcript.

*Accessibility Centre*

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach the instructor and/or the AccessAbility Services as soon as possible. AccessAbility Services can be found at http://www.accessibility.utoronto.ca/Home.htm