

MICB 430B
January – April 2019
Wednesdays, 1:30 - 5:00 PM
Room 1410 Life Sciences Centre

Contact info: (All emails must have MICB430B in the title)

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The **MICB 430B website** on [Canvas](#) will be used for the posting of papers and other information on this course. Log into Canvas using your campus wide log in (CWL).

Learning Objectives for MICB 430B:

There are two goals in this course:

1. Develop your ability to read, critically analyze, present, explain and discuss contemporary research papers from a range of publications related to the microbiome.
2. Develop your appreciation for and ability to peer review.

Each term includes three distinct segments. During each segment, small groups of students are expected to read published research articles and work together to explain that paper to the rest of the class and the faculty facilitator. In that seminar, students will introduce the topic, discuss the research findings and explain the global context of the work.

Three different faculty facilitators will participate in this class to expose you to a broad range of subject areas. Learning objectives for each faculty facilitator:

Dr Brett Finlay: Discussion of seminal literature indicating that the microbiome plays a central role in both health and disease in humans throughout life.

Dr Lisa Osborne: Critical evaluation of methods and study design in microbiome-focused research using small animal models of human health and disease

Dr Cara Haney: Model and non-mammalian systems to uncover molecular mechanisms in host-microbiome interactions

<u>Dates</u>	<u>Instructor</u>	<u>Class format</u>	<u>Topic</u>
Jan 2	Finlay, Haney, Osborne	Introduction & class logistics	
Jan 2	Brett Finlay	Instructor led class	
Jan 9	Brett Finlay	Student presentations	Human microbiome and health and disease
Jan 16	Brett Finlay	Student presentations	
Jan 23	Brett Finlay	Student presentations	
Feb 6	Lisa Osborne	Instructor led class	Evaluating microbiota/microbiome studies
Feb 13	Lisa Osborne	Student presentations	
Feb 20	Reading Week, no class		
Feb 27	Lisa Osborne	Student presentations	
Mar 6	Lisa Osborne	Student presentations	Microbiota, mechanism and model systems
Mar 13	Cara Haney	Instructor led class	
Mar 20	Cara Haney	Student presentations	
Mar 27	Cara Haney	Student presentations	
Apr 3	Cara Haney	Student presentations	

Mark distribution

Presentations:	75%
Participation:	15%
BioRxiv peer review:	10%

Class presentations and discussion combined represent 90% of your final mark

Students will work in small groups to give one 45-minute presentation for each of Dr. Finlay, Dr. Osborne and Dr. Haney's segments (i.e. 3 presentations total). 75% of your overall mark will be awarded for the quality of these presentations (25% per instructor). At the end of class, please send a pdf of your slide deck to the instructor leading the segment.

Students are expected to ask at least one question after each presentation and to participate in all class discussions, including the question and answer session after each paper presentation. 15% of your overall mark will be awarded for your class participation (5% per instructor). No marks will be awarded for those who make minimal or no contribution.

BioRxiv peer review worth 10%, due Wednesday March 20th, 2019 by 9 am

A central component of publishing research is peer-review. In order to determine whether manuscripts should be rejected, revised or accepted for publication, journal editors solicit reviews from three experts in the field. [BioRxiv](#) is a pre-print server where investigators can upload their manuscripts prior to undergoing peer-review. One of the purposes of this server is that authors can get peer feedback prior to submission to a journal. In this assignment, you will provide a critical review of a paper chosen by Drs Finlay, Haney or Osborne from BioRxiv.

The document should be no more than two pages long (single spaced, 12 point font) and should provide a brief summary of the major findings of the paper as they relate to the microbiome, as well as a detailed summary of any Major and Minor concerns you have. Major concerns are issues relate to experimental design, interpretation and validity of the study. Minor comments do not reflect on the validity of the study, but they can draw attention to areas that need clarification, citations that could bolster an argument or need to be discussed to put the current work into context (for example).

Three people will perform independent reviews of their assigned article and submit them by email to the Handling Editors (Drs Finlay, Haney or Osborne). The Handling Editors will then call a meeting with all three reviewers, come up with a consensus review and this will be edited by the group and potentially submitted to the authors. This serves the purpose of the BioRxiv server, helps the authors improve their manuscript, and teaches you about the review process.

A penalty of 2% per every 24 hours past the deadline will be imposed for late submissions. Submission of the summary document is required to receive a passing grade.

Presentation logistics

Each instructor will contact the class prior to his or her section, to provide necessary instructions. Papers will be assigned to students at least one week in advance of their presentation. The facilitator will be responsible for either assigning a specific paper for each group of students or assigning a general subject area or journal that each pair of students can use to select a recent paper to present to the rest of the class. The facilitator is also responsible for evaluating the

strengths and weaknesses of each presentation, but students are encouraged to provide constructive feedback to their peers and learn by analyzing the presentation styles of other students.

Format for in-class presentations

- Students are expected to provide their own computers for class presentation.
- Computer and projector must be set-up and all slides loaded in advance, so the class can start on time.
- Each presentation should be 45 minutes maximum, with 30 minutes dedicated to the introduction and research findings, and 15 minutes putting the paper into a global context (questions and discussion will follow).
- The presentation must provide a thorough review of the literature related to the topic.
- Explain clearly why the topic of the paper is an important problem that is of general interest.
- Provide a clear description of the hypothesis tested.
- Provide a clear explanation of the methodology that is used to test the hypothesis.
- Explain clearly how the results support or refute the hypothesis tested.
- Discuss any potential pitfalls associated with the results and conclusions drawn from them.
- Explain how the results affect the big picture that was a problem in the field.
- Discuss the additional questions that have been raised by the presented results and the future direction of this research.
- All students are expected to ask at least one question per presentation.

Evaluation criteria for in-class presentations

1. Introduction
 - a. Targeted to the audience
 - b. Conveys appropriate significance
 - c. Thorough literature review
2. Results
 - a. Rationale and hypotheses clearly explained
 - b. Research methodology clearly explained
 - c. Results clearly explained
 - d. Main conclusions clearly stated
3. Discussion/Global context
 - a. Significance of the research clearly explained
 - b. The importance of the paper clearly communicated
4. Logical flow
 - a. Reasonable amount of material
 - b. Well organized
5. Comprehension
 - a. Critical evaluation
 - b. Accurate understanding of paper
 - c. Suitable answers to questions
 - d. Good background in subject area
6. Slides
 - a. Clear
 - b. Presented well
 - c. Appropriate use and choices
7. Timing

Feedback for in-class presentations

The facilitator for each month will provide an oral critique after the talk or a written evaluation after all the presentations in your group. Some facilitators might involve the other class members specifically and have the students fill out evaluation forms that are later returned to you. You can always make an appointment with the facilitator for more detailed comments or questions.

The general grading system for a seminar is:

- A+ 90 – 100%
Exceptional work that significantly exceeds course expectations in every aspect.
- A 85 – 89%
A very high level in every criteria, including accuracy, insight and attention to detail.
- A- 80 – 84%
Work that is generally high quality but is slightly inaccurate or lacking in full insight or overlooks a few details. It should not contain errors of any significance.
- B+ 76% – 79%
Work demonstrates adequate understanding but lacks initiative or clarity, or contains presentation problems.
- B 72 – 75%
Work demonstrates understanding but the understanding may be superficial or contains significant errors
- B- 68 – 71%
Work shows little or no depth of understanding and contains one or more significant errors.
- "C" below 68%
Marks of C or lower indicate work that is seriously flawed.