MICB 430A 2023 Term 1
Seminars in Microbiological Research

Dates: Sept 6 – Nov 28 (no class on Wednesday Nov 15 during reading break)
Times: Wednesdays 1:30-5:00 PM. ***Class starts promptly at 1:30 PM!***
Instruction mode, location: In-person, LSC 1410

Instructor	E-mail	Segment-Topic	Dates
Dr. Mike Gold (Course coordinator)	mgold@mail.ubc.ca	1-Neuroimmunology	Sept 13, 20, 27, Oct 4
Dr. Leah Hohman	leah.hohman@ubc.ca	2-Microbiome & aging	Oct 11, 18, 25, Nov 1
Dr. Marc Horwitz	mhorwitz@mail.ubc.ca	3-Viral Pathogenesis	Nov 8, 21, 28

This course is designed for self-motivated students with a strong interest in learning about the latest developments in immunology, medical microbiology, and viral pathogenesis. The course will cover a broad range of topics and will focus on recent papers that report exciting new findings.

Course Aims:
1. To learn about recent advances in immunology, medical microbiology, and viral pathogenesis
2. To develop the ability to critically evaluate the content, significance, and impact of scientific papers
3. To develop effective presentation and communication skills
4. To improve your ability to participate in and lead scientific discussions

Course organization and grading: The course will consist of 3 segments, each of which is worth one third of the total grade. Each instructor will contact the class prior to the start of their segment and provide specific instructions, including the mark distribution, for the learning activities in their segment. Papers will be assigned at least one week in advance of their presentation. Participation in class discussions will count for 15% of the overall grade.

Learning activities: The primary learning activity will be journal club-style presentations of primary research papers in which pairs of class members concisely convey the background, major findings, and significance of the paper, and then lead a discussion about how the paper has advanced the field, changed or challenged current ideas, and paved the way for further work. Each segment may also include a group or individual activity aimed at expanding your knowledge of the field. A key goal is to improve your ability to deliver engaging and effective slide presentations to an audience with a diverse background. Instructors will provide written feedback for journal club paper presentations. As well, class members are encouraged to provide constructive feedback to their peers by highlighting effective aspects of the presentation or by making constructive suggestions. All class members should be invested in helping everyone improve their presentation skills.

Class participation: 15% of your overall grade will be based on your class participation. No marks will be awarded for those who make minimal or no contribution. All class members are expected to read the abstracts of papers being presented before coming to class and to look over the associated mini-reviews so that you can make informed contributions to the discussions. All class members are expected to contribute to the in-class discussions in meaningful ways by asking curiosity-driven questions, discussing implications of the work (e.g., could the approaches in this paper be used to treat disease?), and proposing both near-term and long-term extensions of the work (e.g., If this were your project, what would you do next?). Presenters should act as discussion leaders/facilitators. The expectation is that each class member will contribute at least one meaningful question or comment during each class session.

Specific learning Objectives:

1. To become a self-learner, work effectively with others, and practice effective communication in order to teach others.
2. To become aware of recent research and current issues in the research areas being discussed. To gain an up-to-date knowledge and understanding of the topics presented.
3. To gain a working knowledge of the basic science that has led to important new developments or new paradigms. To gain an understanding of the process from discovery to application.
4. To be able to effectively research a topic using a variety of resources including primary research papers, recent review articles, commentaries, internet resources (e.g., PubMed, Google Images).
5. To be able to quickly learn the basics of a new area and then convey the essential background information in a clear and concise manner to an audience with different levels of familiarity with the subject.
6. To learn how to identify the major conclusions of a research paper, identify the key data that support those conclusions, assess whether the data support the conclusion, and effectively summarize how the new findings have advanced the field.
7. To develop the ability to explain complex experiments in a simplified conceptual manner with only the details that are essential for the audience to understand the conclusion. To develop the ability to annotate data slides so that key results are highlighted.
8. To develop the ability to present a paper or a research project as a coherent story and prevent the audience from getting lost. Graphical abstracts from the paper or an associated mini-review, or that you draw yourself, are excellent presentation aids that can be used as roadmaps. You can show this diagram or parts of it (a) at the beginning of your presentation as a high-level summary, (b) after each results module to summarize the main conclusion of that section and introduce the questions to be addressed in the next section, and (c) at the end of your presentation to summarize the main conclusions and to initiate discussion about alternative explanations, unanswered questions, and future research directions.

How to get started and acquire the background information for your paper:

1. Check that you have access to the assigned paper and to other journals via the UBC Library (http://library.ubc.ca). Contact your instructor if you do not. You will need to use your UBC CWL to access material from the UBC Library.
2. Important papers are often highlighted in the same issue of the journal or by review journals such as Nature Reviews. These mini-reviews usually provide excellent concise summaries of

the paper and its significance, as well as a summary diagram. Many papers also now have "graphical abstracts" that summarize the key findings in the paper.

3. The authors will usually cite the most important previous papers, as well as key review articles, in the introduction to the paper.
4. Search key words on PubMed or Google to identify recent articles, key review articles, and the latest news. A Google image search will often return excellent overview diagrams with links to key review articles. Know your source – focus on peer-reviewed research articles or recent review articles in high profile journals.
5. Always acknowledge your sources in your presentation. If you use diagrams or figures from other papers or from the web, include a brief citation or the URL on the slide with that image. Where you have modified diagrams, you can say "Adapted from…". Most sources allow reproduction for academic purposes.

Presentation logistics:

1. Presenters are expected to provide their own computers for the in-class presentations. Please contact the instructor if this is not possible. Your computer should be set up and ready to project your slides with minimal delay. The podium has USB-C, HDMI and VGA connections.
2. For journal club paper presentations done in pairs, both presenters are expected to be familiar with the background, results, and conclusions, should contribute to the presentation of each of these sections, and should participate in leading the discussion and answering questions.

General guidance for presentations:

1. Ensure that your presentation will fit within the time limits. If it looks like you will go over time, the instructor will ask you to wrap up your presentation in the next couple of minutes. One slide per minute is often a good assumption although simple slides may take less time and complex slides with multiple animations will take longer. Practice your talk but be aware of whether you speak faster or slower when you are a bit nervous. Everyone is a bit nervous when they give a presentation.
2. Effective slides generally have more images and less text. Slide titles can summarize the overall message of the slide; short phrases associated with images or figures provide just enough information for the audience to understand what you are showing and are prompts for what you want to say; use conclusions at the bottom of the slide to help you transition to the next slide. Avoid saying "And next they did". Instead, provide a rationale for what comes next.
3. Introduction/background information: Explain why the topic is an important problem that is of general interest to researchers in the field, scientists in general, or the public. You may want to tell us briefly about the senior author(s) and how their previous work led up to this paper. Describe only the background information that is required for the audience to understand the rest of your talk. Try not to repeat information from previous talks (you could have a summary slide as a refresher) but do try to connect your talk to previous talks, if appropriate (e.g., Remember, we heard about…"). Summary diagrams are often most effective for conveying information and showing how concepts are connected. Make sure that the information is up-to-date. Some information, e.g., an experimental approach used in only one or a few experiments, may be more suited for a "just-in-time-teaching" approach where you describe it right before the data slide, as opposed to at the beginning of the talk in a "methods section". If an experimental approach that the audience may not

be familiar with is used throughout the paper, this might be good to describe at the end of the introduction before getting into the data.

4. Explain experimental approaches in a simplified, graphical, conceptual manner that everyone will understand. Is this a loss- or gain-of-function experiment? What is the one major difference between the test and control samples? What are they measuring and how does it relate to the process being studied? What are the possible outcomes of this experiment? Foreshadowing the results will make it easy for the audience to understand the findings. For example, "To test whether protein X is important for B cell activation, the authors used a loss-of-function approach in which the Cre-Lox system was used to selectively disrupt the gene encoding protein X only in B cells. They then activated control and protein X knockout B cells and assessed B cell activation by using flow cytometry to quantify cell surface expression of the activation marker CD69. Their hypothesis was that loss of protein X would reduce B cell activation (CD69 expression)".
5. There will be much more data in a paper than you can include in your presentation. Identify what the major conclusions of the paper are, then determine which pieces of data best support that conclusion. This will be essential to keep within the time limit. Related experiments or important controls can often be briefly summarized, if necessary. If you think that someone will ask a question about data that you are not showing, you can have a few extra slides at the end of your presentation that you only show if the question is asked.
6. Summary/discussion: Present the main conclusions of the paper or of your research topic. A summary diagram or graphical abstract is often most effective. Describe the significance and potential impact of the findings. These will often be described in the Discussion section of the paper and in mini-reviews about the paper. Major concerns or limitations (e.g., the experimental system doesn't really measure what they say it does or it's unclear that this process occurs *in vivo*) can be addressed as part of your overall discussion of the paper. Minor concerns (e.g., the effect in this experiment is small or the control isn't appropriate) should be described in the context of presenting the experiment, if necessary.
7. Lead a class discussion (not included in the presentation time limit): Be prepared to answer questions from your classmates about experimental design, interpretations, analytical techniques etc. You should pose questions for the audience that prompt discussion, e.g., if this were your project, what would you do next? What questions do you think these authors' next paper might address? If you were to go to this lab as the next step of your career, what aspect of the work would you be most interested in pursuing? You could have your own answers to these questions on a slide, which you reveal only after the audience discussion. All students should contribute to the discussion.

Presentations will be evaluated based on:

1. Effective literature review and introduction of the research topic
2. Clear explanation of the rationale and hypotheses
3. Clear explanation of research methodology
4. Clear explanation of results
5. Good selection of key information presented
6. Communication of the main conclusions
7. Ability to convey the importance of the paper/significance of the research
8. Quality of the discussion
9. Ability to answer questions
10. Effective slides: Uncluttered, effective graphics/images (e.g., summary diagrams, graphic abstracts, flowcharts, etc.), main conclusions clearly indicated, data clearly presented, key comparisons highlighted, text mainly short phrases

Required: After you give your presentation, upload it onto the MICB 430A Canvas site web site (Discussions page) so that others can review it and continue to learn from it. Student presentations other than your own may not be distributed without the consent of all parties involved in its creation (https://learningcommons.ubc.ca/academic-integrity/).

Resources on the MICB 430A Canvas website:

1. Course syllabus
2. Guides for effective paper presentations and effective slides
3. Details for each instructor's segment

Office hours: All instructors are available to meet as needed. Please contact them via email to ask questions, discuss aspects of the course, or to schedule a chat.

Additional UBC resources

Canvas help: https://students.canvas.ubc.ca/help/

Presentation design: https://learningcommons.ubc.ca/student-toolkits/presentation-design/

Presentation skills: https://learningcommons.ubc.ca/student-toolkits/presentation-skills/

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UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources that can be accessed.

UBC values respect for the person, and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. Details of these policies and how to access support are available here: https://senate.ubc.ca/policies-resources-support-student-success

UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of policies regarding academic integrity and issues such as plagiarism can be found here: https://academicintegrity.ubc.ca/student-start/

If you have any concerns regarding the course or your ability to participate fully in the course, please contact the course coordinator (Dr. Gold), one of the other instructors, or the Associate Head for Teaching (Dr. Kion; tkion@mail.ubc.ca).

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LAND ACKNOWLEDGEMENT

We acknowledge that the land on which we gather at UBC Vancouver Point Grey campus is the territory of the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.