BCMB 489
Special Topics in Molecular Pathogenesis CRN
Course Outline: Summer 2020
LOCATION & TIME: Online using Course Spaces and Black Board Collaborate, TWF 2-4 pm
INSTRUCTOR:

Dr. Perry Howard
Office: Petch 207
Office hours: Thursday, 1:00-2:00 pm or by appointment
email: phoward@uvic.ca

Content and Learning Objectives: Molecular Pathogenesis is the study of disease processes and mechanisms. This course will be focused on non-infectious diseases affecting humans. The learning objectives for the course will be, for each disease, students will be able to describe and discuss the following:

1. Describe the clinical course of the disease including the impacted population, estimated number of cases and impact.
2. The etiology and what is understood of the mechanism(s) underlying the disease. Students will dig into the primary literature to explain biochemical mechanisms behind disease processes. Here is will be important to select diseases for which there is strong literature on the mechanistic cause of the disease.
3. Current treatment options if any, and either a description of what current targeted therapies are or possible approaches to targeted therapies.
4. What are molecularly therapies and how could they be applied to selected diseases.
5. What are the future big questions for those studying each field.
6. In addition, students will develop written and oral skills in scientific communication; as well as the importance and intricacies of effective teamwork.

Format: The course will be delivered as synchronized lectures, group work, and presentations, but will include independent study. Most of the content of the course will be from student led investigation into mechanisms of human disease. **Because of the requirement for synchronized lectures and group work, attendance is mandatory for all students. Missing a presentation in which you are scheduled to present without valid medical reason, or family affliction will result in 0% for that piece of the assessment. Attendance will be recorded at the beginning of each session, so it is important students show up on time.**

Group selection: Students will be assigned groups at the beginning course. Groups will work together to select topics, and develop presentations on those topics. The group can decide how to divide up the work however, everyone must participate in each presentation and is responsible for knowing the material in the presentation. The dynamic of group work can be challenging. It is imperative that you help to create an environment of mutual respect. This includes showing up informed and prepared to contribute to the group. Please ensure that everyone has opportunity to contribute and discuss the presentation. In your careers, you will frequently be required to work in teams not of your choosing. It is important that you develop skills to navigate the group dynamic.

Individually students will also write 2 reviews of topics chosen by the student from the approved presentation topics, or from a topic chosen by the student but approved by the instructor.

May 11-22th: Dr. Howard, lectures/workshops, preliminary group work, and individual writing

I will begin with lessons on scientific writing and expectations for the presentations. I will then go through examples of Cancer, and Genetic disease. During this initial period, groups must select disease topics (on a first come first serve basis) and sign up for presentation dates. Individuals must select topics they wish to write reviews and get permission. Individuals will select examples of LDR and OCAR. Individuals should research and start to write their reviews. While we have set aside two hours per session, some sessions may be shorter depending on goals and content; likewise, while I have set aside time for groups to work in class, it is expected that students come prepared to work during group sessions. Group work can be challenging and you will need to find a way to work together to complete to objectives. Groups may decide to schedule sessions outside of class at a mutually agreeable time as necessary. It is imperative during the COVID 19 crisis that we continue to practice social distances. Therefore, all classwork including group meeting must be completed online. **Under no circumstances, should groups meet in person.**

May 18-22nd Group work and individual writing

Groups will work on their first presentations. Individuals will work on review 1 and submit examples of OCAR and LDR.

May 25-May 29th : Group work and individual writing

Groups will work on preparing their presentations. Individuals will complete and submit their first draft of review 1.

June 1-5th: Group presentations of Topic 1

Groups will give their presentations in class during this week. Individuals will participate in the presentations and provide comments to the presenters. Individuals will work on review 2.

June 8-12th : Group work and individual writing

Groups will prepare their second presentations. Individuals will write review 2 and revise and resubmit review 1.

June 15-19th: Group work and individual writing

Groups will finalize their second presentations. Individuals will continue to work on review 2.

June 22-26: Group presentations of Topic 2

Groups will present their final presentation on topic 2. Individuals will finish and submit review 2. Individuals will participate in the presentation and provide comments to the presenters.

Important Dates:

May 22nd Examples of OCAR and LDR Due

May 29th Preliminary submission of Review 1 is due

June 1-5th Group Presentations 1

June 12th Final submission of Review 1

June 22-26th Group presentations 2

June 26th review 2 is due.

Topics for review 1:

Each student will research and write about one of the following types of targeted therapies:

1) Small molecule /drug based
2) Biologicals including antibodies, proteins, peptides- focus on one of these
3) Gene Therapy/replacement- viral and nonviral delivery of genetic material
4) Gene Editing
5) RNA based therapies
6) Cell based therapies
7) Immunotherapy (non-antibody based)

Students must check with me before getting too far along to ensure they've selected an appropriate topic.

Outline of expectations for review 1:

Students will conduct a literature review of their selected topic. Each review will include:

1) An overview of the field
2) Focussed discussion of how the therapeutic approach works and how it has been used in the approach of at least 2 different diseases
3) An overview of where the field is going, the current limitations, and potential

Size limit: The review can be no greater than 1500 words. Review must use an **LDR structure.** Each individual must submit original work. Submissions should be in editable Word format using the following format for a file name (Bioc 489 first name last name.docx). While you will work in groups to develop the presentation, the ideas you present in your review must be your own. Do not simply copy the work of the group in your review.

Grading for review 1:

Initial submission:

The initial grade will be based on the degree to which the review conforms to a LDR structure and addresses the expectations outlined above. Feedback will be provided on how to improve the review.

Final submission:

Lead or hook is up front and grabs the attention of the audience and identifies the problem upfront- 5%

Developed a description of the knowledge gap and illustrates their point with a least 2 examples- 5%

Resolution provides an understanding where the field is going, the challenges ahead and opportunities- 5%

Topics for review 2:

Each student will research and write about one of the following diseases:

Type 1 diabetes; type 2 diabetes; maturity onset diabetes (MODY); colon cancer; lung cancer; glioblastoma; gastro intestinal stromal tumors; childhood leukemias (pick 1); alzheimer's; parkinsons; muscular dystrophy (pick 1); cystic fibrosis; fanconi anemia; ovarian cancer; Spinal muscular atrophy; Tauopathies; or student choice provided they get approval.

Be sure that your essay addresses the following:

1. The clinical course of the disease including the impacted population, estimated number of cases and impact.
2. The biochemical mechanisms behind disease processes.
3. Current treatment options if any, and either a description of what current targeted therapies are or possible approaches to targeted therapies.
4. What are the future big questions for those studying this field and future direction.

Size limit: The review can be no greater than 3000 words. Student must use an **OCAR structure**. Submissions should be in editable Word format using the following format for a file name (Bioc 489 first name last name.docx). While you will work in groups to develop the presentation, the ideas you present in your review must be your own. Do not simply copy the work of the group in your review.

Grading for review 2:

Provides an **Opening** that leads the reader to a clearly articulated **Challenge** while providing an introduction/overview of the disease 5%

The **Action** of the review describes what is understood about the biochemical mechanism behind the disease; current treatments; and current or possible targeted therapies 10%

Resolution clearly identifies where the field is or needs to go and the potential for treatments; is forward looking and realistic 5%

Presentation 1: 20 minute presentation using a structure based on LDR + 5-10 minutes for questions. The topic will be chosen from the topics for review 1. Everyone in the group must participate in the presentation by giving a portion of it. After the presentation, everyone in the audience will provide feedback on the presentation, which will be provided to the presenting group.

Presentation 2: 20 minute presentation using a structure based on OCAR + 5-10 minutes for questions. The topic will be chosen from the topics for review 2. Everyone in the group must participate in the presentation by giving a portion of it. After the presentation, everyone in the audience will provide feedback on the presentation, which will be provided to the presenting group.

Grading for presentations:

Presentation 1 LDR format:

Lead or hook upfront that grabs the attention of the audience and clearly identifies the problem/challenge- 5%

Developed a description of the field and focus of the review and illustrates their point with a least 2 examples- 5%

Resolution provides an understanding where the field is going, the challenges ahead and opportunities- 5%

Presentation 2 OCAR format:

Opening that begins with a wide view and presentation of the scope of the problem while leads the listener to the challenge addressed

Challenge Clearly identified and guides the reader to what to expect from the presentation

Action demonstrates an accurate description of molecular processes (pathways or targeting mechanism) and treatments and includes molecularly targeted options

Resolution widens out again to discuss the big unanswered questions, where the field is headed.

Grade weighting:

Examples of OCAR and LDR 5%
Review 1 initial 5%
Review 1 final 15%
Review 2 25%
Group presentation 1 15%
Group presentation 2 20%
Participation 15%- based on attendance (5%), online etiquette and questions (2.5%), feedback (2.5%), and group self-assessment (5%).

Late submissions will be assessed a penalty of 3% per day.

Online tools:
We will be using both Course Spaces and Zoom for our class. Grades, documents, and course information will be posted on Course spaces. All lectures, presentations, and group sessions will be live streamed using Zoom. Students will receive an invite through course spaces to join the Zoom sessions. Background noise can be extremely distracting and disruptive so please mute your mike before joining the class. If you have a question, raise your hand or type your question in the chat session. When you are acknowledged, unmute your mike and ask your question.

Access to literature off campus:
Most material is available off campus by using the Library EZProxy connection (https://login.ezproxy.library.uvic.ca/login) and logging in with your netlink ID and password. Most journals offer public access to material >1yr old which will be fine for our purposes.

UVic Grading Scheme

A^{+}	90 -100	**B**$^{+}$	77 - 79	**C**$^{+}$	65 - 69	**F**	< 50

A	85 - 89	**B**	73 - 76	**C**	60 - 64	**N ****	< 50
A$^-$	80 - 84	**B$^-$**	70 - 72	**D**	50 - 59		

** N grades

Students who have completed the following elements will be considered to have completed the course and will be assigned a final grade:

- *Review 1 and 2*
- *Group presentation 1 and 2*

Failure to complete one or more of these elements will result in a grade of "N" regardless of the cumulative percentage on other elements of the course. An N is a failing grade, and it factors into a student's GPA as 0. The maximum percentage that can accompany an N on a student's transcript is 49.

DEPARTMENT INFORMATION AND POLICIES:

1. The Department of Biochemistry and Microbiology upholds and enforces the University's policies on academic integrity. These policies are described in the current University Calendar. All students are advised to read this section.

2. Cell phones, computers, and other electronic devices must be turned off at all times during live class sessions unless being used for a purpose relevant to the class.

3. Any recordings of live class sessions may only be performed with written permission of the instructor, and are for personal use only. The instructor retains copyright to such recordings and all lecture materials provided for the class (electronic and otherwise); these materials must not be shared or reposted on the Internet.

4. Course materials, such as notes, problem sheets, quizzes, examinations, example sheets, or review sheets, may not be redistributed without the explicit written permission of the instructor.

5. Students are expected to be available for all exams. Instructors may grant deferrals for midterm examinations for illness, accident, or family affliction, and students must provide appropriate documentation 48 hours after the midterm exam. The Department of Biochemistry and Microbiology considers it a breach of academic integrity for a student taking a deferred examination to discuss the exam with classmates. Similarly, students who reveal the contents of an examination to students taking a deferred examination are considered to be in violation of the University of Victoria policy on academic integrity (see

current University Calendar). Deferral of a final exam must be requested with an Academic Concession form and submitted directly to Undergraduate Records. Deferred final exams for fall term courses will be arranged by the instructor. Deferred final exams for spring term courses will be arranged through Undergraduate Records and must be written before the end of the summer term as stipulated in the University Calendar.

6. Requests for review/remark of a midterm exam must be made within one week of the exam being returned.

7. The instructor reserves the right to use plagiarism detection software or other platforms to assess the integrity of student work.

8. Supplemental exams or assignments will not be offered to students wishing to upgrade their final mark.

9. Anonymous participation in online classes is not permitted without written permission of the instructor.

Centre for Accessible Learning

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, approach the Centre for Accessible Learning (CAL) as soon as possible in order to assess your specific needs.
https://www.uvic.ca/services/cal/index.php

Course Experience Survey (CES)

We value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience. The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to your CES dashboard. You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device. I will remind you nearer the time but please be thinking about this important activity.