BCMB 489
Special Topics in Molecular Pathogenesis CRN
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Content and Learning Objectives: Molecular Pathogenesis is the study of disease pr
mechanisms. This course will be focused on non-infectious diseases affecting humar
objectives for the course will be, for each disease, students will be able to describe a
following:

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

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

Group selection: Students will be assigned groups at the beginning of the semester. This is done in order to ensure that each student has a group of mutual interests and strengths with which to work up informed

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.

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:

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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**.

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%),

A	85 - 89	**B**	73 - 76	**C**	60 - 64	**N ****	< 50
A-							