Molecular Targets of Drug Discovery
Fall 2019, Tuesdays 3-6pm, Pfizer Campus

Instructor:
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Office phone: 401-863-5014
Office Hours: Immediately before or after class meeting times

Course Description: This course focuses on the identification of drug targets and the development of novel drugs. Students will also be exposed to experts in the field of drug discovery. *Pre-requisite knowledge:* some background knowledge in biology, physiology or cell biology would be helpful, but is not required.

Learning Outcomes:
Welcome to Molecular Targets of Drug Discovery! The overall goal of this course is to provide students with a solid understanding of the ways in which therapeutic targets are identified and selected. A variety of targets will be discussed as they relate to particular disease conditions. In addition, students will be exposed to experts in the field of drug discovery and development. By the end of this course, I am confident that students will:

1. Understand the methodology of identification of a drug target and development of a successful drug for that target.
2. Have a solid foundation in drug discovery and development that can be applied to a career in biomedical research in academia and/or industry.
3. Have an appreciation for the many aspects of drug discovery and also some of the "current topics" in the field.

Course Content: It is assumed that students have some background in biology (or other life science), therefore lectures will be given assuming student understanding of basic concepts in these areas. If at any time a student finds the lecture material challenging, they should email and/or meet with the instructor *as soon as* possible so that a solution can be found. All students should feel free to ask questions during (or after) the lectures.

Course Meeting Time: Tuesdays 3-6pm
I realize that time is precious for all of us and that this class is not your only responsibility. Therefore, I will try to limit the time you need to spend on work outside of class. However, I do expect that you will come to class prepared to participate and be engaged. I also expect that you will come prepared to take the quizzes. Please be sensitive to the fact that although the class time is scheduled for 3 hours, there may be days when we are done earlier than expected. In this case, I am happy to stay until 6pm to answer questions, but do not expect that students will stay unnecessarily.

Course Time Requirement: There are 13 class meetings scheduled for 3 hours each which amounts to 39 total hours in class. Most of the required work will be done during class time however students are expected to read for approximately 1 hour per week outside of class time in preparation for each week's lecture. In addition, students will be expected to study outside of class time in preparation for bi-weekly quizzes on the material. Additional time outside of class may be used to prepare the final presentation, but much of this will be done during class time.

Course Information & Policies:

I. Grading:

- Grades will be based on bi-weekly quizzes, in class discussions, participation & attendance, final presentation.
- Grading Scale:

  A: 85-100%
  B: 75-84%
  C: 60-74%
  NC: <60%

• Quizzes (each worth 10%)	=50%
• In class discussions	=15%
• Participation & Attendance	=10%
• Final Presentation	=25%
	100%

III. Assignments:

- *Quizzes*
  - There will be bi-weekly quizzes on the previous two weeks worth of material. Quizzes will be given during class through Canvas. Students will not be allowed to use notes or other resources for quizzes.
  - Missed quizzes cannot be made up. If a student misses a quiz, the other quizzes will be weighted more heavily.

- *In Class Discussions*
  - The class will participate in a series of group discussions during class about current topics in drug discovery. Most readings associated with the discussions will be done in class. One (or two) student(s) will be assigned to lead the discussion each week. Student participation in these discussions will count towards the final grade.

- *Participation & Attendance*
  - All students are expected to be present and prepared for class. Student attendance and active engagement in class lectures and discussions will count towards the final grade

- *Final Presentation*
  - Students will work in groups of a maximum of 3 students to design and present a powerpoint presentation outlining the process of identifying a specific molecular target and designing a drug for that target. Students will present on targets that were not specifically covered in the lectures, primary literature and/or other material focused on during the semester.
  - Guidelines:
    - Groups of no more than 3 students
    - 20 minute presentation including time for questions
    - All students in a particular group will receive the SAME grade, so choose group members wisely!
    - Students will be graded by the instructor and their peers.
    - More detailed guidelines will be discussed in class and posted on Canvas.

Expectations of Students:

1. In consideration of other students and the instructor, students are expected to arrive to class on time and prepared for that day's lecture and/or quiz.
2. Please participate in class discussions. Participation will make the class time more fun and engaging.

3. Please inform the instructor if you will be absent from class. The instructor reserves the right to require proof of excuse (e.g. doctor's note, etc).
4. Any and all cases of cheating and/or plagiarism will be handled accordingly. See the Brown Academic & Student Conduct Codes for details. https://www.brown.edu/academics/college/degree/policies/academic-code

Student Accessibility & Accommodations:
The instructor for this course is committed to full inclusion of all students. Please inform Dr. Horrigan early in the term if you have a disability or other conditions that might require accommodations or modification of any of the course procedures. You may speak with Dr. Horrigan before or after class or schedule a private meeting. You may also wish to contact **Student and Employee Accessibility Services** at 401-863-9588 or SEAS@brown.edu

Diversity & Inclusion Statement:
I strive to create a learning environment that is supportive of all perspectives, experiences, and identities (including race, gender, class, sexuality, religion, ability, etc). If there is some aspect of this course, whether it is content that is presented or content that is discussed during class, that is upsetting to you or needs to be addressed, please feel free to bring it to my attention privately. In addition, if any other matters not specifically addressed in the syllabus come up, please feel free to discuss them with me before or after class.

Course Schedule

- *This syllabus & lecture schedule are subject to change (with notice) at the discretion of the instructor at any point during the semester.*

TENTATIVE

Week	Date	Topic	Other
Ion Channels as Targets			
1	Sept 10th	TRP channels in pain	Topic #1 Discussion
2	Sept 17th	CFTR in Cystic Fibrosis	Topic #2 Discussion
3	Sept 24th	NMDA receptor in depression	Quiz #1 Topic #3 Discussion
G-Protein-coupled Receptors as Targets			
4	Oct 1st	Sigma Receptors (guest)	Topic #4 Discussion
5	Oct 8th	TBD	Quiz #2 Topic #5 Discussion
6	Oct 15th	TBD	Topic #6 Discussion
Signaling Proteins as Targets			
7	Oct 22nd	Chronic lymphocytic leukemia	Quiz #3 Topic #7 Discussion
8	Oct 29th	PD10A inhibitors (guest)	Topic #8 Discussion
9	Nov 5th	Aging (guest)	Quiz #4 Final Presentation Prep
Genes as Targets			
10	Nov 12th	Hemophilia	Topic # 10 Discussion
11	Nov 19th	TBD	Quiz #5 Final Presentation Prep
12	Nov 26th	Muscular dystrophy (guest)	Topic #12 Discussion Final Presentation Prep
13	Dec 3rd	FINAL PROJECTS	