

BIMM 194 – Human Pathogenic Viruses

Spring 2019

Location: York 3010

Date/Time: Tuesdays from 12:30pm-1:50pm

Instructor: Matt Daugherty

Course Summary: Most viral pandemics, including AIDS and pandemic flu, are the result of viruses crossing from their natural host species into the human population. In this course, we will focus on the role that viral evolution and evasion of the immune system plays in transmission and pathogenesis of several devastating human viruses including HIV, influenza, Ebola and other emerging viruses.

Prerequisites: BIMM100 (Molecular Biology), and its prerequisites.

Lectures: I will present the first two lectures reviewing general principles of virology, evolution and immune responses. Each remaining class will consist of presentation and discussion of one paper related to viral immunity. Selected papers will assigned 1-2 weeks in advance and need to be read before class by everyone. To facilitate discussion, I will assign each paper to a group of ~4 students who will responsible for knowing that paper in great depth. I will plan to call on students in that group to walk us through the main points in the paper.

For your assigned paper, I will expect you to be able to lead us through:

- 1) What is the context for the paper and the general questions the authors set out to answer?
- 2) For each figure: what is the specific question, what are the methods, what are the results, what can/did the authors conclude?
- 3) What are the primary conclusions of the data from the entire paper?
- 4) What is the take home message of paper and how does it contribute to the field?

Groups will be assigned in week 2.

Quizzes: There will be nine quizzes, one every week (except the first week) at the end of each class. They will consist of T/F questions regarding the material. Questions will be related to conclusions or concepts emphasized during the presentation. Each quiz will count for 5% of your grade.

Participation: Questions, comments, suggestions are encouraged at any time during the lecture.

Grading: Your grade will be a reflection of your quiz scores (45%), your ability to lead us through your assigned paper (35%), and your overall participation in weeks for which you are not part of the assigned group (20%). The grading will be normalized to the highest score. 60-70% of that score will be a D, 70-80% will be a C, 80-90% will be a B and 90-100% of that an A.

'Viruses in the News': One additional point toward your grade can be obtained each week (except the first week) for bringing in an article from a credible news source about emerging viruses in addition to a brief (<100 words) summary of the article and why you found it interesting/newsworthy.

Email communication: mddaugherty@ucsd.edu is the appropriate email for all correspondence. Please remember to include your first and last name in the body of the email and WRITE BIMM194 IN E-MAIL SUBJECT (your e-mail will not be read if you do not write that). Questions that can be asked before or after lecture should not be asked and will not be answered by e-mail.

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Tentative Spring 2019 Class Schedule:

Class 1 - April 2: Introduction to viruses, evolution and the immune system

Class 2 - April 9: Continued introduction to viruses, evolution and the immune system

Class 3 - April 16: *Retroviridae* (e.g. HIV-1, HIV-2)

Class 4 - April 23: *Picornaviridae* (e.g. Poliovirus, Rhinovirus, Hepatitis A virus)

Class 5 – April 30: Other positive-strand RNA viruses (e.g. SARS, MERS, Chikungunya virus)

Class 6 - May 7: *Poxviridae* (e.g. Smallpox)

Class 7 - May 14: *Herpesviridae* (e.g. Herpes Simplex virus, Epstein-Barr virus)

Class 8 - May 21: *Orthomyxoviridae* (e.g. Influenza virus)

Class 9 - May 28: *Flaviviridae* (e.g. Dengue virus, West Nile virus, Zika virus)

Class 10 - June 4: Other negative-strand RNA viruses (e.g. Ebolavirus, Nipah virus, Lassa virus)

No final