

BIO 563 Virology

(Fall, 2008, Bull Run Hall 247)

Text Book: Principles of Molecular Virology, 4th edition, by Alan J. Cann

Instructor: Yuntao Wu (Phone: 703-993-4299; email: ywu8@gmu.edu)

Office: PWII, Room 154B

Class, Thursday 7:20 pm – 10:00 pm. Bull Run Hall Room 247

August 28:

Introduction I:

Viruses are Distinct from Living Organisms. The History of Virology. Living Host Systems.

September 4:

Introduction II:

Cell Culture Methods. Serological/Immunological Methods. Ultrastructural Studies.
Molecular Biology

September 11 (No Class, NYCDC AIDS bicycle ride)

September 18:

Particles I:

The Function and Formation of Virus Particles. Capsid Symmetry and Virus Architecture. Enveloped Viruses. Complex Virus Structures.

September 25

Particles II:

Protein-Nucleic Acid Interactions and Genome Packaging. Virus Receptors -- Recognition and Binding. Other Interactions of the Virus Capsid with the Host Cell.

October 2

Genomes I:

The Structure and Complexity of virus Genomes. Molecular Genetics. Virus Mutants. Genetic Interactions between Viruses. Non-genetic Interactions between Viruses. 'Large' DNA Genomes. 'Small' DNA Genomes.

October 9

Genomes II:

Positive-Strand RNA Viruses. Negative-Strand RNA Viruses. Segmented and Multipartite Virus Genomes. Reverse Transcription and Transposition. Evolution and Epidemiology.

October 16

Replication:

Overview of Virus Replication. Investigation of Virus Replication. The Replication Cycle.

October 23

Expression I:

Expression of Genetic Information. Control of Prokaryote Gene Expression. Control of Expression in Bacteriophage I. Control of Eukaryote Gene Expression.

October 30

Expression II:

Genome Coding Strategies. Transcriptional Control of Expression. Post-Transcriptional Control of Expression.

November 6:

Infection I:

Virus Infections of Plants. Immune Responses to Virus Infections in Animals. Viruses and Apoptosis. Interferons Evasion of Immune Responses by Viruses.

November 13:

Infection II

Virus-Host Interactions. Prevention and Therapy of Virus Infection. Virus Vectors and Gene Therapy. Chemotherapy of Virus Infections.

November 20:

Pathogenesis I:

Mechanisms of Cellular Injury. Viruses and Immunodeficiency. Virus-Related Diseases. Bacteriophages and Human Disease. Cell Transformation by Viruses.

December 4:

Pathogenesis II

Viruses and Cancer. New and Emergent Viruses..

Subviral Agents: Genomes Without Viruses, Viruses Without Genomes:

Satellites and Viroids. Prions.

December 11: Final Exam

Final Exam: multiple choices

Paper Presentation or essay writing (30%)

*** Class participation (30%)**

Final Exam: multiple choice and short questions (40%)

Bonus for class activity: 5%

*** Class participation:**

- For each class attendance: 0.5%. Total: 10 classes x 0.5% = 5%

Grade will be deducted for late (0.1% deduction) and half class (0.25% deduction)

- Activity in class: 2.5% for each class. Total: 10 classes x 2.5% = 25%

excluding the first three class. Each student is required to ask at least 2 questions to the presenter to earn 2.5%. If good questions are asked, a bonus 0.5% will be awarded

A: 93-100%

A-: 90-92%

B+: 87-89%

B: 83-86%

B-: 80-82%

C+ 77-79%

C: 70-76%

D-: 60-69%

F: < 60%