

## MBIO 604 General Virology

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Office Hours	8:00 – 17:00	Class Location & Time	CTRB Rm 601 : 1:30-2:30PM, Wednesdays

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### **Text:**

No required text. Primary literature and/or reviews will be provided prior to each lecture topic.

### **Suggested readings and references:**

Principles of Virology by Flint, Enquist, Racaniello, and Skalka

TWiV (podcast)

<http://www.virology.ws/virology-101/>

### **Description:**

This course focuses on building basic virology concepts with the goal of enabling each student to appreciate scientific information presented in seminars and papers related to virology.

First, the class will discuss the basic replication steps common to viruses: entry, replication and egress. Further, the class will discuss the interaction of virus with host cellular proteins during the replication cycle. The student will gain an appreciation of the general virus replication cycle.

The class will discuss the diversity of virus and the student will appreciate various classes of viruses and their strategies to accomplish the basic replication steps.

Further, the class will discuss how and why some viruses cause disease (viral pathogenesis), and how viral diseases spread (mode of transmission). The students will appreciate the pathogenesis and transmission mechanism of viral diseases. Finally, the class will explore current approaches of vaccines and antivirals with a goal of understanding various strategies to prevent and treat viral diseases. The students will appreciate the global burden of viral diseases and will understand the rationales of antivirals and vaccines.

At the end of the course, the students will understand the concepts of 1) basic virus life cycles, 2) interactions with host proteins, 3) viral pathogenesis, and 4) rationale of antivirals and vaccines.

Further, the student will be capable to apply the concepts to their thesis and projects.



## Lecture Schedule

Class	Date	Lecturer	Topic
1	8/24	Chung	Course overview: What is virus?
2	8/31	Chung	Replication cycle overview/ Baltimore Classification: Diversity of virus genomes
3	9/7	Sokoloski	Virus structure
4	9/14	Sokoloski	Virus entry (endocytosis pathway)
5	9/20 *	Diamond	DNA virus replication
6	9/28	Sokoloski	RNA virus replication
7	10/5	Casella	Retroviruses (replication and pathogenesis)
8	10/12	Sokoloski	Virus / host interaction
<b>10/12 Mid-term exam : 30 min.</b>			
9	10/19	Casella	Cellular responses to virus infection and viral evasion: innate immune response.
10	10/26	Lukashevich	Novel vaccine platforms to control RNA emerging viruses
11	11/2	Chung	Virus evolution/Antiviral drugs (Paper selection)
12	11/9	Zheng	Animal models
13	11/16	Nair	Viruses as tools
<b>Thanksgiving Break</b>			
14	11/30	Students	Panel discussion
15	12/7	Students	Final exam

## Evaluation

In-class participation (presentation, and discussion) : 20 pt

Quiz : 15 pt

Attendance: 15 pt

Final exam : 50 pt.

**Goals for in-class participation:**

Questions! This course will use a learning-from-questions method.

**Goals for final exam:****Expectations:**

1. Active participation in class as defined by:
  - a. Informal verbal presentation of review of original published work as pertains to goals as assigned.
  - b. Engagement of active discussion and educating peers.
2. Final exam :
  - a. Understanding of basic concepts of virus replication
  - b. Understanding of fundamental replication strategies of different virus classes
  - c. Understanding of how virus spread and cause diseases
  - d. Understanding of state-of-art strategy of controlling viral diseases.

Sexual misconduct (sexual harassment, sexual assault, and sexual/dating/domestic violence) and sex discrimination are violations of University policies. Anyone experiencing sexual misconduct and/or sex discrimination has the right to obtain confidential support from the PEACC Program 852-2663, Counseling Center 852-6585, and Campus Health Services 852-6479. Reporting your incident to any other University employee (including, but not limited to, professors and instructors) is an official, non-confidential report to the University.

To file an official report, please contact the Dean of Students Office 852-5787 and/or the University of Louisville Police Department 852-6111. For more information regarding your rights as a victim of sexual misconduct, visit the Office for Civil Rights (<http://www2.ed.gov/about/offices/list/ocr/docs/know-rights-201404-title-ix.pdf>) and for more information about resources and reporting at UofL, visit the Sexual Misconduct Resource Guide (<http://louisville.edu/hr/employeerelations/sexual-misconduct-brochure>).

Diversity and Inclusion Statement

Our department and University of Louisville strives to foster and sustain an environment of inclusiveness that empowers us all to achieve our highest potential without fear of prejudice or bias. We commit ourselves to building an exemplary educational community that offers a nurturing and challenging intellectual climate, a respect for the spectrum of human diversity, and a genuine understanding of the many differences-including race, ethnicity, gender, socio-economic status, national origin, sexual orientation, disability, and religion that enrich a vibrant metropolitan research university. We expect every member of our academic family to embrace the underlying values of this vision and to demonstrate a strong commitment to attracting, retaining, and supporting students, faculty, and staff who reflect the diversity of our larger society.