Syllabus

MVP Core

CAMB 7060

Fall Semester 2024

Course Directors and Contact Info:

Sunny Shin, Johnson Pavilion 201B, 215-746-8410, sunshin@pennmedicine.upenn.edu
Jay Zhu, Johnson Pavilion 211A, 215-573-4104, junzhu@pennmedicine.upenn.edu
Joseph Fraietta, Perelman Center for Advanced Medicine 9-104, 215-746-4083, jfrai@upenn.edu
Italo Tempera, Wistar Institute, 215-898-3912, itempera@wistar.org
Chris Hunter, Hill Pavilion 310F, 215-573-7772, chunter@vet.upenn.edu
Boris Striepen, Hill Pavilion, 215-573-9167, striepen@vet.upenn.edu

Section Directors for Fall 2024:

Bacteriology I & II : Sunny Shin/Jay Zhu

Virology I : Italo Tempera/Joseph Fraietta

Description

The MVP Core class provides CAMB-MVP students with key fundamental knowledge of Bacteriology, Virology, and Parasitology. The course runs through the Fall and Spring for first year CAMB-MVP students and other students interested in this topic. The course starts with 3 overview lectures and is then organized into three sections that cover principles of Bacteriology, Virology, and Parasitology.

Prerequisites

None

Enrollment criteria

Required for all first year CAMB-MVP students. Non-CAMB-MVP students by permission of course directors.

Schedule	Location
MWF, 1:45-2:45	Johnson Pavilion 209

Format

- Lecture
- Discussion - Themed lecture sets with intermittent journal article discussion groups

Student assignments

One research proposal for each section (bacteriology, virology, parasitology)

Journal article presentations within each subsection

Quizzes within each subsection

Attendance at weekly Microbiology seminars and one other seminar of your choice (Prokaryotic, Virology, or Parasitology)

Additional assignments that will vary by subsection

Grading Criteria:

30% paper presentation

30% research proposal

15% quiz

15% participation (asking questions during lecture, participation in paper discussions, participating in study section, etc.)

10% seminar attendance

Course Goals

Students who complete this course successfully will have gained:

- A broad introduction to host-pathogen interactions
- A survey of bacteriology, virology and parasitology with emphasis on common and distinct themes
- Ability to analyze relevant primary articles in-depth
- Ability to design hypotheses to address a gap in knowledge and design experiments to test the hypothesis

Course Values

We ask that all members of the MVP core community – the instructors, lecturers, and students – work together to create a supportive, inclusive environment that welcomes all students, regardless of their race, ethnicity, gender identity, sexuality, religious beliefs, physical or mental health status, or socioeconomic status. Diversity, inclusion, and belonging are all core values of this course. All participants in this course deserve to and should expect to be treated with respect by other members of the community.

Our class should be a space where everyone feels welcome and safe. In order to facilitate a welcoming environment, all participants in this course are expected to :

- Exercise consideration and respect in their speech and actions.

- Attempt collaboration and consideration, including listening to opposing perspectives and authentically and respectfully raising concerns, before conflict.
- Refrain from demeaning, discriminatory, or harassing behavior and speech.

It is also important to us that everyone who participates in this class has the resources to do so. Please let us know if you need any special accommodations in the curriculum, instruction or assessments of this course to enable you to participate fully. We will make a full effort to maintain the confidentiality of any information that you share with us.

Attendance Policy

Students are expected to attend all of the classes and paper discussions, as participation is an important aspect of the course. We understand that expected or unexpected things can happen during the semester that may prevent you from attending class. In that case, we ask that you contact the section leaders ahead of time to let us know if you are unable to attend.

Guidelines/Expectations for Student Paper Presentations

Students not assigned to present:

1. Read the paper in advance of the presentation day.
2. Come prepared to present some of the figures and participate actively in the discussion with observations and answers to questions about approaches or interpretations by the authors.

Students assigned to present (2-3 students for each paper):

1. Meet the faculty mentor for the paper well in advance of the presentation to go over expectations and discuss the background for the paper. It is your responsibility to establish contact with the faculty member.
2. Format will be a journal club style presentation via PowerPoint and should contain the following elements:
    A. The assigned students will give a brief presentation of the background of the research including rationale and key previous findings upon which it is based,
    B. The other students in the class will be asked to volunteer and present key findings in the figures.
    C. The assigned students will be asked to give a critical review of the major findings and interpretations and the significance of the paper overall.
3. Meet with the faculty mentor for the paper immediately after your presentation for feedback.

Faculty Mentor:

1. The assigned faculty member will meet with presenters prior to the presentations.
2. Faculty mentors are encouraged to give brief comments at the end of the presentation session about where the paper fits into the general thrust of research in their field.

Guidelines/Expectations for Student Research Proposals:

The students will work in pairs to write a 2 page research proposal that is due approximately one and a half weeks before the end of the bacteriology, virology, and parasitology sections. The proposals can be based on a topic related to one of the discussion papers, a seminar that the students attended, or another topic of the students' choosing. The proposal will be written in a format similar to the NSF Graduate Research Fellowship Program research proposal, with relevant background, hypothesis, and two specific aims addressing different aspects of the hypothesis, along with approximately 5-10 references.

The research proposals will then be assigned to two different students, who will serve as the primary and secondary reviewer. The proposals will be discussed and reviewed at the end of the bacteriology, virology, and parasitology sections. Constructive feedback on the proposals will then be provided to the students.

Course Directors

Bacteriology Section

Sunny Shin, Ph.D.
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Jay Zhu, Ph.D.
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Virology Section

Italo Tempera, Ph.D.
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Joseph Fraietta, Ph.D.
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Parasitology Section

Chris Hunter, Ph.D.
Email: chunter@vet.upenn.edu

Boris Striepen, Ph.D.
Email: striepen@vet.upenn.edu

CAMB 7060 – Bacteriology

MWF, 1:45-2:45pm Johnson Pavilion 209

DATE	DAY	TITLE	LECTURER/ PRESENTER	EMAIL
9/4/2024	W	Intro: Course Layout Intro: Pathogen Genomes	Drs. Shin, Striepen, You Dr. Bushman	sunshin@pennmedicine.upenn.edu striepen@vet.upenn.edu you@pennmedicine.upenn.edu bushman@pennmedicine.upenn.edu
9/6/2024	F	Intro: Concepts of Host-Pathogen Interactions	Dr. Striepen	striepen@vet.upenn.edu
9/9/2024	M	Intro: Host Immune Responses to Pathogens	Dr. Scott	pscott@vet.upenn.edu
9/11/2024	W	Bacterial Basics, Global Microbiome, Nucleic Acid Management in Prokaryotes	Dr. Bushman	bushman@pennmedicine.upenn.edu
9/13/2024	F	Antibiotic Resistance	Dr. Planet	planetp@email.chop.edu
9/16/2024	M	Student Paper Presentation	Dr. Bittinger	bittingerk@email.chop.edu
9/18/2024	W	Principles of Bacterial Pathogenesis	Dr. Brodsky	ibrodsky@vet.upenn.edu
9/20/2024	F	Strategies for Bacterial Adhesion and Invasion	Dr. Brodsky	ibrodsky@vet.upenn.edu
9/23/2024	M	Student Paper Presentation	Dr. Brodsky	ibrodsky@vet.upenn.edu
9/25/2024	W	CAMB symposium		
9/27/2024	F	Signal transduction in bacteria	Dr. Goulian	goulian@sas.upenn.edu
9/30/2024	M	Signal transduction in bacteria	Dr. Goulian	goulian@sas.upenn.edu
10/2/2024	W	Student Paper Presentation	Dr. Goulian	goulian@sas.upenn.edu
10/4/2024	F	Bacterial cell-cell interactions	Dr. Zhu	junzhu@pennmedicine.upenn.edu
10/7/2024	M	Student Paper Presentation	Dr. Zhu	junzhu@pennmedicine.upenn.edu
10/9/2024	W	Intracellular bacteria	Dr. Shin	sunshin@pennmedicine.upenn.edu
10/11/2024	F	Intracellular bacteria	Dr. Shin	sunshin@pennmedicine.upenn.edu
10/14/2024	M	Student Paper Presentation	Dr. Shin	sunshin@pennmedicine.upenn.edu
10/16/2024	W	Microbiome	Dr. Grice	egrice@pennmedicine.upenn.edu
10/18/2024	F	Student Paper Presentation	Dr. Grice	egrice@pennmedicine.upenn.edu
10/21/2024	M	Gram-positive pathogens	Dr. Zackular	Joseph.Zackular@pennmedicine.upenn.edu
10/23/2024	W	Immunity to bacteria	Dr. Abt	Michael.Abt@pennmedicine.upenn.edu
10/25/2024	F	Student Paper Presentation	Drs. Abt and Zackular	Michael.Abt@pennmedicine.upenn.edu Joseph.Zackular@pennmedicine.upenn.edu

10/25/2024	F	**Proposals due**		
10/28/2024	M	Clinical Microbiology	Dr. Rodino	Kyle.Rodino@Pennmedicine.upenn.edu
10/30/2024	W	Phage and CRISPR	Dr. Marino	ndmarino@vet.upenn.edu
11/1/2024	F	Student Paper Presentation	Dr. Marino	ndmarino@vet.upenn.edu
11/1/2024	F	**Proposal critiques due**		
11/4/2024	M	**Bacteriology Study Section** **Note:** 1:45-3:45pm	Drs. Shin & Zhu	sunshin@pennmedicine.upenn.edu junzhu@pennmedicine.upenn.edu
11/6/2024	W	First day of Virology		