

BIMM 194 / BGGN 283: Microbiology Current Topics**2021 fall - All classes are In-Person**

Th 11:00am – 12:20pm; York 3010; Instructor: James Golden, PhD

BIMM 194. Adv Topics-Molecular Bio, Microbiology Current Topics (2 credits)

This class will cover current topics in microbiology from recent scientific review articles and primary research papers. Topics could include areas such as molecular mechanisms of bacterial cell biology; genetics and evolution of traits such as antibiotic resistance; bacterial interactions such as biofilms, symbiosis, or pathogenesis; and microbial biotechnology.

Prerequisites: Molecular Biology (BIMM 100); upper division standing.

Class Schedule

Class – Date	Topic	Reading
1 – 9/23	Course introduction, Review of Microbiology	None
2 – 9/30	Review: Cyanobacteria	Cyanobacterial Blooms; Bald Eagle Killer Identified (Science Mag)
3 – 10/7	Research: Cyanobacterial toxins	Eagle Killer (science.aax9050)
4 – 10/14	Review: Antibiotics	New Ways to Squash Superbugs
5 – 10/21	Research: New antibiotic	Antibiotic teixobactin
6 – 10/28	Review: Bacteriophage	Phage Therapy
7 – 11/4	Research: Bacterial interactions with eukaryotic cells	Bacterial Phage Tail-like Structure Kills Eukaryotic Cells
- HW – 11/11	Homework Due on Canvas by 11:59pm	
* – 11/11	Veterans Day Holiday	No Class
8 – 11/18	Review: Microbial Biotechnology	Marine Bioactives review
* – 11/25	Thanksgiving Holiday	No Class – Happy Thanksgiving
9 – 12/2	Graduate Student presentations	Graduate-student abstracts

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Office hours: in-person after each class, Th 12:20pm; or by appointment on Zoom (Zoom link will be put on Canvas), just send an email with a few suggested times to meet.

Class Meetings: Classes are in-person and will be interactive. Questions, discussion, and participation by everyone in the class is encouraged. There will be a **sign-in sheet** for each class.

Class web site: Canvas at <https://coursefinder.ucsd.edu> or <https://canvas.ucsd.edu>

The "**Modules**" section contains pdf files for the syllabus and for the assigned review and research papers. Students may also download the assigned papers directly from the publisher for **free**, but only from on-campus or by using VPN. Weekly **Quizzes** (for classes with assigned reading) will be on **Canvas** and will be **graded** to help make sure that each student is **prepared to discuss** the assigned reading in class.

Grades:

Because the expectation is to have interesting discussions during class, **class attendance is required** and receives 10 points for each of the 9 class (**90 points total**). Students should **sign in** for each class.

Quizzes will be taken on **Canvas** before **each class that has an article reading assignment** to ensure that students are prepared for class discussion. There are no quizzes for the first and last classes of the quarter. The online quizzes will be posted by noon the day before class. Quizzes are **open-book** but must be taken individually with no collusion or outside help. Each student is required to take the quizzes **independently** with **no** input from others. For this class, open book means you can access the class paper, other research papers, and reference material, but you cannot post the homework question for others to answer. No Chegging – your own work and thought is required for learning. There will be **7 quizzes**, each with 6 questions worth 2 points each for a total of 12 points per quiz (**84 points total**).

Homework assignment. There will be **1 homework assignment** worth **26 points** that is due by 11:59pm on the due date.

There are **no** extra-credit assignments or make-up quizzes, so set a reminder for each quiz. If a class is unavoidably missed because of circumstances outside of a student's control, then the student should **contact the instructor within 24 hours** of the missed class to obtain instructions for a makeup written report similar to the homework assignment but based on the missed class material.

Final grades will be based on attendance and participation in each class, the 7 quizzes, and the homework assignment. The final grade earned for the course will be based on the total points possible, which is $9 \times 10 + 7 \times 12 + 26 = \mathbf{200 \text{ points total}}$. The grade scale is lenient such that missing 1 class and its quiz without doing a makeup assignment means a loss of 22 points, but that is still an A-.

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
Minimum Score	194	180	174	168	162	154	148	142	134	128	<128
Percent	97	90	87	84	81	77	74	71	67	64	<64

Homework (HW) written assignment:

For the homework assignment, students will **find and read about a microbiology topic** that they personally find **fascinating** and then **write a 2- to 3-page paper**. Students should search and research reliable sources to identify their **microbiology** topic, and then read and collect information from reliable sources on their chosen topic. **Reliable sources** include professional unbiased journalism and education organizations, professional scientific societies, peer-reviewed scientific publications in journals from major publishers.

The assignment should have **2 or 3 paragraphs** that introduce the topic and provide background or history, **2 or 3 paragraphs** on recent knowledge or research related to the topic, **1 paragraph** describing why the topic is significant and important, and **1 or 2 paragraphs** stating where the topic is heading in the future. Students should include the **references** for their source(s) at the end of the assignment (usually 3 to 6 references). The HW assignment is expected to be 2 to 3 pages, single spaced, 11 pt. Arial font (or equivalent). The HW should be **submitted on Canvas as a docx, or pdf file**. A spelling and grammar checker should be used, and the assignment should be carefully proofread. The homework assignment should be **uploaded to Canvas Assignments** (or possibly Gradescope) **by 11:59 PM on the due date**. Students must **write their own HW independently and in their own words – no cheggging**. The assignment must be in the student's own words. **Do not copy or plagiarize** articles, web pages, or any other source. By submitting a homework assignment, students are certifying that it is exclusively their own work. Students can discuss topics with others, but **all HW assignments are expected to be different from each other**. Homework assignments will be automatically checked by Turnitin.com.

BGGN 283 Graduate Students ONLY: Graduate students taking BGGN 283 have an additional requirement for the course that is directly related to their **homework assignment**. Graduate students will prepare a one paragraph (about 250 words) **abstract based on their homework assignment** and a **6- or 7-minute** computer **presentation** that will be presented to the class in the **last class period**. The abstract should be uploaded to Canvas or emailed to the instructor by the Monday before the presentations for the class to read. For the presentations, the goal will be to educate the class on an interesting and important current microbiology topic. The presentations will be followed by questions from the class (3 to 4 minutes). The presentations should include about 5 or 6 slides. A title and introduction (1 slide), background (1 or 2 slides), the importance/significance of the topic (1 or 2 slides), the current state of understanding (1 or 2 slides), and future directions or what needs to be done next (1 slide). Because the presentations are short, it will be important to limit the amount of information that is presented and to practice the presentation to check the timing. To avoid duplication of topics, graduate students should discuss their topics with each other and the instructor by 1 week before the homework assignment is due.

General guidelines for reading research papers:

Research papers are written for people who already know something (or a lot) about the subject matter. Students will need to look up definitions and other information to understand the paper. Students are not expected to understand everything in the articles, but should pay attention to the following:

1. Identify the **questions** being asked in the paper – the author's hypotheses.

Frequently the introduction or the first few paragraphs will present background information and raise the questions that will be addressed in the paper.

2. Identify the main **conclusions** in the paper.

The main conclusions will be summarized in the abstract and are presented in the discussion/conclusion section. Determine why the conclusions are important.

3. Examine the data and experiments that were performed to answer the questions.

The experiments and data will be briefly summarized in the abstract and will be presented in the Methods and Results sections of the paper. What was the **question** each experiment was trying to address? What was the **experimental design** – what was the approach used to answer the questions? What do the results show? Did the experiment answer the question or not? Are the author's conclusions strongly or weakly supported by the experimental data?

4. For each individual experiment:

Determine **how** the experiment was done. Examine the data. Consider the author's conclusions derived from the experimental data and decide if the conclusions are valid. Decide if proper **experimental controls** were included. Consider any caveats or concerns raised by the authors about their data. Think about alternative conclusions or explanations for the data — maybe the authors are wrong!

Search "How to Read and Understand a Scientific Paper"

For example:

[How to Read and Comprehend Scientific Research Articles - YouTube](https://www.youtube.com/watch?v=t2K6mJkSWoA)

<https://www.youtube.com/watch?v=t2K6mJkSWoA>

How to Read and Understand a Scientific Paper: A Step-by-Step Guide for Non-Scientists

https://www.huffingtonpost.com/jennifer-raff/how-to-read-and-understand-a-scientific-paper_b_5501628.html

Statement on Office for Students with Disabilities (OSD):

To receive accommodation, students must present their "Authorization for Accommodation" (AFA) form provided by the Office for Students with Disabilities (OSD) to the instructor. It is the student's responsibility to make sure class and exam schedules for all their classes do not have any conflicts.

Statement on Academic Integrity: Please see information linked in Canvas

Integrity of scholarship is essential for an academic community. The University expects that both faculty and students will honor this principle and in so doing protect the validity of intellectual work. For students, this means that all academic work will be done by the individual to whom it is assigned, without unauthorized aid of any kind. The consequences of being caught cheating can be severe.

Information can be found here:

<http://www.ucsd.edu/current-students/academics/academic-integrity/index.html>

Students are expected to do their own work, as outlined in the UCSD Policy on Integrity of Scholarship:

<http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2>

Academic misconduct cannot be tolerated. Any student who engages in suspicious conduct will be confronted and subjected to the disciplinary process. Cheaters will receive a failing grade on the exam or assignment, and/or in the course. They may also be suspended from UCSD pursuant to university guidelines. (Translation: don't cheat!)

Academic misconduct includes but is not limited to:

1. **Cheating**, such as using "crib notes" or copying answers from another student during the exam.
2. **Plagiarism**, such as using the writings or ideas of another person, either in whole or in part, without proper attribution to the author or the source. Copying anything from any source is plagiarism if the source is not clearly cited. Plagiarism is stealing someone else's ideas and presenting them as your own.
3. **Collusion**, such as engaging in unauthorized collaboration on exams or assignments, completing for another student any part or the whole of an exam or assignment, or procuring, providing or accepting materials that contain questions or answers to an exam or assignment to be given at a subsequent time.