

Fall Semester 2020
BIOL 695/BIOS 704 Seminar
Antimicrobial Peptides

Instructor: Monique van Hoek

Day/Time: Thursday, 1:30 pm - 2:45 pm
 Aug 24, 2020 - Dec 16, 2020

Room: SciTech (PW): K. Johnson Hall 252

Office Hours: Blackboard Collaborate by appointment.

Email: (Strongly preferred) mvanhoek@gmu.edu.

Class Schedule: We will meet weekly, with some exceptions as noted in the updated schedule distributed in the first week of class. We will not meet the week of Thanksgiving. The presentation schedule will be adjusted depending on the number of students enrolled and will be distributed in the first week of class. **This class may be offered online in Fall 2020 instead of in person.** We will use Blackboard for class communication, slide posting and class blog. We will also use Blackboard for homework submission.

Term Paper: The final assignment (Paper) will be due on **December 3rd, 2020**, before 11:59 pm. Submission will be via Blackboard or into my email box mvanhoek@gmu.edu

Grading		DUE DATE
Presentation	50%	As assigned
Summaries of Other Papers	5% each, 10% total	As assigned
Class Blog	10%	As assigned
Final Assignment	30%	December 3rd, 2020
Total	100%	

Final grade:					
98-100	A+	87-89	B+	77-79	C+
93-97	A	83-86	B	70-76	C
90-92	A-	80-82	B-	65-69	C-
				<65	F

Other Academic Policies: All GMU academic policies will be followed.

Warning: Plagiarism is not acceptable and assignments may be subject to manual or computer scanning for plagiarized material. Assignments with plagiarized material will receive a ZERO.

Honor Code: The GMU Honor code will be followed by all students.

Absences: If you have to miss a class for professional or personal reasons, then you automatically will be required to submit the two summaries on two of the three papers presented in the missed week. As a courtesy you can let me know. If you have to miss the class in which you are scheduled to present, you must let me know to reschedule.

Paper Substitution: You must present the assigned paper. If you have a problem with the paper or you wish to substitute a different paper, it must be approved by me at least 10 days before the next class meeting so that others can be notified to read the new paper.

Assignments:

1. **Research Paper Presentation: The major assignment in this class (50% grade) is presenting your assigned topic paper.** You will choose or be assigned one of the topics listed below (list to be updated in the first week of class). You will choose or be assigned a week in which to present.
 - a. **Timing of Presentations:** You will be partially graded on the timing of your presentation. It must be **NO LONGER than 30 minutes** and you will be timed. Make sure you practice with your slides.
 - b. **Presentation Format:** Your presentation should have 3 main components.
 - 1) Background/Introduction to the topic (10-15 mins). You are introducing the class to the most important things about this topic. You can/should supplement with other papers here. What are the critical pieces of background material they need to understand the experiments?
 - 2) The main point(s) from the paper (no need to present all figures/methods) – i.e. what does this paper prove that advanced the field of knowledge in this topic? (10 mins).
 - 3) The conclusion and the current model (5-10 mins). Some papers are a few years old, and the model may be more developed since that time. If appropriate, present the most up-to-date model of the topic as a conclusion.
 - c. **Remember:** The focus of the each topic (and presentation) is the bacterial pathogenesis (how the microbe is causing disease, usually on a molecular or cellular level), or on an aspect of microbial physiology which could lead to pathogenesis.
 - d. **Background** is critical. Your talk will be the only information everyone has on the topic, so you have to take them from zero to the level of your paper in a few minutes.
2. **Summaries of other talks:** I strongly encourage you to attend all sessions of this class. You will produce a short (< 1 page) summary of two (2) other papers presented on two other weeks in the class. This could be just your notes from the presentation.
3. **Blog:** There will be some homework assignments involving a class blog. This will be done via Blackboard. Details will be provided in class.
4. **Final Assignment:** Write a term paper on a **Antimicrobial Peptide topic** of your choice.
 - a. In place of a final exam, you will write a ~ 5 page (single spaced, 1" margins, 12 point font, references can be extra or included, your choice) paper on a Bacterial Pathogenesis topic of your choice. You can (but do not have to) choose to expand the topic you presented on, or from the list below. It will be an overview, placing recent findings in the background of the area's literature and biomedical context.
 - i. You should aim to use at least 8-10 references, of which half or more should be primary research papers, the rest can be review articles. No "common sources" like Wikipedia or generalized websites unless the information can truly not be found elsewhere. You will have to justify those to me.
 - ii. Use scientific writing style.
 - iii. Use numbered references in the text.
 - b. Sample topics:
 - i. Host-defense peptides in oysters.
 - ii. Anti-microbial peptides in plants.
 - iii. Anti-microbial peptide in your favorite animal.
 - iv. Chemical synthesis of antimicrobial peptides.
 - v. Testing of antimicrobial peptides: In vitro, ex vivo and in vivo methods.
 - vi. Immunomodulatory activity of antimicrobial peptides

Presentation Topics List:

Each TOPIC is to be presented on one day. Two or Three thematically linked but separate papers are listed for each topic (depending on the number of students). Each paper must be presented within 30 minutes. You should work with your same day presenters to coordinate introduction and background material.

Table 1: Antimicrobial peptides Seminar class – Topics and weeks subject to change.

	Topic	Presenter	Homework
1 st Week	Quiz, Introduction part 1	Van Hoek	Quiz
2 nd Week	Introduction part 2 How to find a cathelicidin peptide	Van Hoek	Assignment: Blog post about an interesting AMP. Assign Human, Animal, Plant, Oyster, Fish, Monkey, Panda, Wallaby, Platypus, Cow, sheep, pig, Cobra, Python, Bacterocins.
3 rd Week	How to discover new AMPs	Barney – guest lecture Review Blog Posts in class	Assignment: Read the Alligator Bioprospector paper.
4 th Week	Student Presentation 1,2	Human Alpha defensins	
5 th Week	Student Presentation 3,4	Human beta Defensins	
6 th Week	Student Presentation 5,6	Human cathelicidin	
7 th Week	Student Presentation 7,8	Rhesus theta-defensin	
8 th Week	Student Presentation 9,10	Pig peptides (PMAP) HAMP	
9 th Week	Guest Lecture – AMP research in van Hoek Lab	Van Hoek/van Hoek Grad student	
10 th Week	Oyster Week!	Invite Brett Froelich Van Hoek Presenting	Assign my chapter on beta-defensins
11 th Week	Student Presentation 11,12	Bacterocins	
12 th Week	Student Presentation 13,14	Plant AMPs	
13 th Week	Student Presentation 15,16	Panda, Wallaby	
14 th Week	Student Presentation 17,18	Platypus, Cobra.	
15 th Week	Guest Lecture – AMP research in van Hoek Lab	Van Hoek/van Hoek Grad student	
Dec 3 rd	Final Class – Final paper due	Final thoughts, review, questions, course evaluations.	