**Spring Semester 2022**

**BIOL 695/BIOS 704 Seminar**

**Antimicrobial Peptides**

Title: **BIOL 695 / BIOS 704 Antimicrobial Peptide (van Hoek)**

Instructor: Dr. Monique van Hoek

Day/Time: Wednesday, 4:30 pm - 5:45 pm, Jan 26, 2022 - May 4, 2022

Off-campus, F2F 0-1% Async Instructional Method

Room: **BIOL 695-001 and BIOS 704-002 are distance education sections.**

Office Hours: Wednesday, 4:30 pm - 5:45 pm, on Blackboard Collaborate Ultra, or by appointment.

Email: [mvanhoek@gmu.edu](mailto:mvanhoek@gmu.edu). (Please put **BIOL 695** or **BIOL 702** in subject line).

Course Description**:** This is a graduate level seminar class in which we will deeply explore antimicrobial peptides, especially antibacterial peptides. The topic this semester will be: “Antimicrobial peptides”. We will examine what are antimicrobial peptides, what are their properties, how can we discover them, what are their mechanisms of action, and how can they be used or developed as novel therapeutics. Students will then present recently published scientific papers to the class on a variety of topics, to include: Human cathelicidin peptide, Human Alpha defensin peptides, Human beta Defensins, and Rhesus theta-defensin and synthetic antimicrobial peptides, among other related topics. We will have guest lectures, including for example a guest lecture on how to discover new AMPs, and AMPs in Oysters. Students will learn to use advanced antimicrobial databases and prediction algorithm websites.

Objective:The objective of this class is to deeply study a topic in microbiology and biochemistry, in this case antimicrobial peptides. By the end of this class, students should be able to:

1. Describe the fundamental properties of antimicrobial peptides and their mechanisms of action.
2. Describe the different classes of human antimicrobial peptides, and compare and contrast.
3. Describe the regulation of antimicrobial peptide gene expression in humans.
4. Describe and discuss Cryptic Peptides.
5. Discuss one example of an antimicrobial peptide in depth, with respect to its properties, activities, expression and regulation.
   1. properties,
   2. activities,
   3. expression and
   4. regulation.

Class Schedule: The lectures will be posted for asynchronous viewing. Students will present their video assignment asynchronously by uploading to Blackboard. Along with asynchronous student presentations, online activities, assignments and assessments will also be assigned. The presentation schedule will be adjusted depending on the number of students enrolled and will be distributed in the first week of class. We will use Blackboard for class communication, group meetings, office hours, slide posting and class blog. We will also use Blackboard for homework and final exam submission.

**Office hours: Office hours will be offered** “synchronously” during the class meeting times, with asynchronous student presentations, along with online activities, assignments and assessments.

Final Term Paper: The final exam/assignment (Paper) will be due on **December 6th, 2021**, before 11:59 pm. Submission will be via Blackboard or into my email box [mvanhoek@gmu.edu](mailto:mvanhoek@gmu.edu)

# Grading:

| **Topic** | **Percent of Final Grade** | **Due Date** |
| --- | --- | --- |
| Student Introduction Videos | **5%** | End of First week |
| Antimicrobial Peptide Blog | **10%** | End of Second Week |
| Peptide Database Project | **20%** | As assigned |
| Video Presentation on Peptides | **30%** | As assigned |
| Commentary on Peers Videos | **10%** | All semester |
| Final Exam Paper | **30%** | December 6th, 2021 |
| **Total** | **100%** |  |

# Final grade:

| **Points** | **Letter Grade** |
| --- | --- |
| 98-100 | A+ |
| 93-97 | A |
| 90-92 | A- |
| 87-89 | B+ |
| 83-86 | B |
| 80-82 | B- |
| 77-79 | C+ |
| 70-76 | C |
| 65-69 | C- |
| <65 | F |

# Other Academic Policies:

**All GMU academic policies will be followed.**

**Plagiarism:** 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:** n/a. (Asynchronous online class)

**Alternative Paper Substitution**: You must present the assigned paper unless you have an alternative approved by me. If you have a problem with the assigned 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.