**Fall Semester 2020**

**BIOL 695/BIOS 704 Seminar**

**Antimicrobial Peptides**

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

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.

Course Description**:** This is a graduate level “seminar” class in which we will deeply explore a topic in microbiology and biochemistry. The topic this semester will be: “Antimicrobial 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, Rhesus theta-defensin, Pig peptides (PMAP), HAMPs. Then students will present recent papers on Bacterocins, Plant AMPs, Oyster (Bivalve) AMPs, as well as Panda, Wallaby, Platypus, and Cobra AMPs. We will have several guest lectures, including a guest lecture on how to discover new AMPs, and on AMPs in Oysters. Other guest lectures

Objective:The objective of this class is to deeply study a topic in microbiology and biochemistry. 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 antimicrobial peptides, and compare and contrast.
3. Identify examples of antimicrobial peptides in the major phylogenetic families.
4. Describe the regulation of antimicrobial peptide gene expression
5. Describe and discuss Cryptic Peptides
6. Discuss one example of an antimicrobial peptide in depth, with respect to its properties, activities, expression and regulation.

Class Schedule: If we meet in person, 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. We will use Blackboard for class communication, slide posting and class blog. We will also use Blackboard for homework submission. **This class may be offered online in Fall 2020 instead of in person due to the coronavirus pandemic.** If online, we will employ a combination of some “synchronous” meetings and guest lectures, with asynchronous student presentations, along with online activities, assignments and assessments.

Final 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:

| **Topic** | **Percent of Final Grade** | **Due Date** |
| --- | --- | --- |
| Presentation | **30%** | As assigned |
| Summaries of Other Papers | **0.5% each, 10% total** | As assigned |
| Class Blog | **20% (For example: 4% per post, 1% per comment, 5 assignments)** | As assigned |
| Other Assignments | **10%** | As assigned |
| Final Assignment | **30%** | December 3rd, 2020 |
| **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.**

**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.