

BIOL 695 / BIOS 704

Fall 2013

M 4:30 – 7:10 pm

Bull Run Hall, 247

Topics in Bioscience: Mechanisms of Host Cell Communication during Infectious Diseases and Role of Exosomes

Catalogue Description (Credits: 1): *Prerequisite: Admission to the MS or PhD Bioscience program, or instructor's permission.* The focus of this course is to provide a broad overview of how host cells communicate in response to infection with microbes and how the cell communication processes affect microbial survival and dissemination. A burgeoning aspect of host cell communication that has become an extremely active research area within the past few years is the role of extracellular vesicles called exosomes that are released in response to infection. This course will also involve a review of some of the current understanding of how exosomes play a role in intercellular communication processes.

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Office hours:	By appointment only; please e-mail or call to set a time. Contact by e-mail is preferred.
Website:	Log in at http://mymason.gmu.edu to access Blackboard for course-related materials. If you need help with Blackboard, contact support center at x3-8870, or send an e-mail to courses@gmu.edu

Course Objectives: The main objective of this course is to provide an overview of the current state of knowledge regarding the processes that affect the survival or dissemination of microbes within the host and the cell communication mechanisms involved during host response to infection. In addition, this course aims to provide hands-on training and experience in understanding and analyzing primary literature and also the ability to communicate research findings in a coherent, effective, and critical manner.

Course Requirements: Grades in this seminar course are based on your presentation of a published article (70%), participation in class discussions that follow presented articles (15%), and attendance (15%). Your class presentation will be scored by your classmates using the attached rubric, and these evaluations will be taken into account for assigning the presentation portion of your grade. There will not be any exams or make-up sessions.

Journal Article Presentation (70% of grade): Students will be organized into groups of two. Each week one group will be assigned one of the topics outlined below. The group will then choose an original research article directly related to that topic by searching through the literature and present the research article for the class the following week. Selected research articles cannot have a publication date older than 2009. The selected article must be sent to me as a PDF (NOT the “full text” format) no later than the Thursday before your presentation date. Once I receive the article, I will post it on Blackboard so that all the students in the class have access to it and have a chance to read it before the presentation date. It is very important that you choose an

original research article that directly relates to your assigned topic; I will take this into account for your grade. If you have any doubts as to whether you have selected the right type of article for your topic, please consult me and I would be more than happy to provide guidance. Please make sure to avoid choosing “Review” articles as they provide a review of the work that has been done in a specific research topic/area but are not themselves original research papers. Each class will consist of two presentations separated by a short (10 min) break. Each presentation should last not more than 45 min (typically, this means about 45 slides). We will have a 10 min discussion period after each presentation, which the presenters are expected to lead and during which the presenters should address the questions that are raised to the best of their abilities.

Please keep in mind that for your journal article presentation you must also provide your own critical analysis of the data and not confine your presentation only to repeating the contents of the article. In other words, you must discuss your analysis of the strengths and weaknesses of the article; for example, whether the methodologies used are appropriate and adequate, if additional experiments are warranted to strengthen a particular claim, whether you think the conclusions of the article are appropriate and match the findings, and what future questions should be addressed. You must also provide satisfactory reasons for your criticisms; it is not sufficient to state a criticism without explaining the reasons for it or providing examples from the article that illuminate your specific criticisms. Please also consult the attached rubric for additional aspects that you should consider for your presentation.

Attendance and Late Arrival to Class (15% of grade): Please attend the classes regularly and be on time for each class. If you keep missing the class or habitually arrive late, it will hurt the attendance part of your grade. If you miss a class but can provide official documentation that shows a valid excuse for your absence (e.g., a doctor’s note; police report of a car accident, etc.), no points will be deducted from your attendance part of the grade. Given the limited number of meetings for this class and the importance of class participation given the nature of this course, 4% from the attendance portion of the grade will be deducted for each unexcused absence.

Class Participation (15% of grade): This portion of the grade is for regular engagement in the discussions that follow each journal article presentation. Throughout the course, students are expected to ask pertinent questions and/or discuss their points of view or thoughts about the presented articles. The level of class participation of each student will be tracked during this course and used for evaluating this portion of the grade at the conclusion of the course.

Laptop Use Policy: The use of electronic devices such as laptops is allowed but only for class-related activities such as taking notes or downloading research articles that are being presented.

Topics:

- Role of cytokines in intercellular communication during microbial infections
- Role of chemokines in intercellular communication during microbial infections
- Host signaling pathways involved in cell-cell communication during microbial infections
- Exosome modulation of the host immune response during bacterial infections
- Exosome modulation of the host immune response during viral infections
- Intercellular communication by exosome-derived RNA during microbial infections

ACADEMIC INTEGRITY

GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

GMU EMAIL ACCOUNTS

Students must activate their GMU email accounts to receive important University information, including messages related to this class.

OFFICE OF DISABILITY SERVICES

If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. <http://ods.gmu.edu>

OTHER USEFUL CAMPUS RESOURCES:

WRITING CENTER: A114 Robinson Hall; (703) 993-1200; <http://writingcenter.gmu.edu>

UNIVERSITY LIBRARIES "Ask a Librarian"

<http://library.gmu.edu/mudge/IM/IMRef.html>

COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS): (703) 993-2380;

<http://caps.gmu.edu>

UNIVERSITY POLICIES

The University Catalog, <http://catalog.gmu.edu>, is the central resource for university policies affecting student, faculty, and staff conduct in university affairs.