MGG 8770 Molecular Biology of mitochondrial Disease

Course director: Dr. Maik Hüttemann; 3214 Scott Hall; phone: 313-577-9150: email: mhuuttema@med.wayne.edu; office hours: Fridays 3-4pm and by appointment.

Instructors: See course schedule for a list of individual instructors and topics.

Information: All official information regarding this course, including schedule updates, policies, discussion forums, lecture slides and notes, supplementary reading and other assignments will be posted on the Blackboard web site. Please consult the site regularly.

Required textbook: None. Required reading assignments will be posted on Blackboard.

Credits and Class Meetings: The class will meet on Mondays from 3:00-4:50pm in room 3140 Scott Hall - Winter Semester for 2 credits. See schedule for specific lectures/topics.

Learning Objectives: This course will cover mitochondrial structure and function, including mitochondria as sites of such phenomena as commitment to cell death, generation of “free radicals” that damage cells, and the production of most cellular energy. We will discuss traditional mitochondrial diseases (e.g., caused by mutations in the mitochondrial DNA) and also more recent findings of the involvement of mitochondria in the most common human diseases such as ischemia/reperfusion injury as seen in stroke and heart attacks, neurodegenerative diseases, diabetes, aging, and cancer. The objectives of this course are to provide the student with an advanced understanding of the ways energy and “free radicals” are key to human health and disease, and how interference with these processes causes numerous human diseases including the ultimate human “disease,” aging.

Structure: The course will consist of lectures and interactive discussions of central topics in mitochondrial bioenergetics and human disease. Students are expected to become familiar with the assigned background material on each topic before each class. Background material will consist primarily of posted papers as assigned reading. Class time will be spent discussing the assigned topic and analyzing relevant research. Additionally, each student will be assigned one or two journal article(s) to review in a formal power point presentation, which will take place as part of any of the disease related topics (one presentation only per topic) or as part of the “Cell signaling and mitochondria/Student seminar presentations” in April.

Group discussions of journal articles: Students are expected to read and prepare (research)
papers posted on Blackboard for discussion before class. In the group the students will jointly discuss and critique the material. The role of the faculty member is that of discussion facilitator rather than lecturer. The faculty member will not give a lecture; rather he/she will be there to start the discussion and to encourage students to critically analyze the data. Students should come to class prepared to state and answer the following for each figure or table: (a) What question is being addressed? (b) What is the experimental methodology being applied? (c) What are the data? (d) What are the controls? Are the controls appropriate? (e) What are the conclusions? (f) Are the conclusions justified? Participation throughout the semester will account for 30% of the overall grade in the course.

**Guidelines for power point presentations of research papers:** Detailed instruction are provided in the content folder “Cell signaling and mitochondria/Student seminar presentations” on Blackboard.

**Grading Policy:** There will be one 2-hour exam which will count about 30% towards the final grade. The formal power point presentation will count about 30% as does oral participation during class (plus about 10% for attending class). Final grades will be determined by the course director and other participating faculty.

**The following additional University polices also apply to this course. For more information see the Blackboard link: Important WSU Offices and University Policies (Student)**

**Religious holidays:** Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their course directors in advance so that mutually agreeable alternatives may be worked out.

**Student Disabilities Services:** If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located in the Adamany Undergraduate Library. The SDS telephone number is 313-577-1851 or 313-202-4216 (Videophone use only). Once your accommodation is in place, the course director will meet with you privately to discuss your special needs. The mission of Student Disability Services is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University. Students who are registered with Student Disability Services and who are eligible for alternate testing accommodations such as extended test time and/or a distraction-reduced environment should present the required test permit to the course director at least one week in advance of the exam. Federal law requires that a student registered with SDS is entitled to the reasonable accommodations specified in the student’s accommodation letter, which might include allowing the student to take the final exam on a day different than the rest of the class.
**Academic Dishonesty – Plagiarism and Cheating:** Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct ([http://www.doso.wayne.edu/student-conduct-services.html](http://www.doso.wayne.edu/student-conduct-services.html)). Students who commit or assist in committing dishonest acts are subject to downgrading (to a failing grade for the test, paper, or other course-related activity in question, or for the entire course) and/or additional sanctions as described in the Student Code of Conduct.

- **Cheating:** Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise. Examples include: (a) copying from another student’s test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a "cheat sheet" during an exam.

- **Fabrication:** Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.

- **Plagiarism:** To take and use another’s words or ideas as one’s own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.

- **Other forms of academic misbehavior include, but are not limited to:** (a) unauthorized use of resources, or any attempt to limit another student’s access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.

**Course Drops and Withdrawals:** In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on Pipeline. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: [http://reg.wayne.edu/pdf-policies/students.pdf](http://reg.wayne.edu/pdf-policies/students.pdf)