

Nutrition 845: Nutritional Metabolism Spring 2016

Course Instructors: Coleman, Makowski and Nutritional Biochemistry Faculty

Meeting: 2:00-4:50, Tuesdays, Room 241 Rosenau

3 - ~6 Tuesdays, Room 2308 McGavran-Greenberg

Purpose: An advanced seminar designed to enhance skills in critical analysis, research design and evaluation of current topics in cellular physiology, metabolism, and nutritional biochemistry.

Date	Room/ Time	Faculty	Topic	Note
Mondays 9-noon				
January 12	241R 2:00-4:30	Coleman	Brief introduction	
January 19	2308/ 3:30-6:00	Coleman	Energy metabolism and KO mice	
January 26	241R 2:00-4:30	Makowski	Breast cancer and the microenvironment	Only R241 is available
February 2	2308/ 3:30-6:00	Coleman	Lipids/lipoproteins	
February 9	2308 3:30-6:00	Coleman/ Klett	Insulin clamp	
February 16	2308/ 3:30-6:00	Coleman / Hursting	Does a cancer cell care about the diet of its host	
February 23	241R 2:00-4:30	Makowski	Obesity and inflammation.	[Coleman gone]
March 1	241R/ 2:00-4:30	Makowski/ Styblo	Environmental obesogens	[Coleman gone]
March 8	241R/ 2:00-4:30	Coleman/ Zeisel	Stable isotopes	
March 15	---	-----	-----Spring Break-----	
March 22	241R 2:00-4:30	Makowski/ S Krupenko	Folate metabolism and cancer	[Coleman gone]
March 29	2308/ 3:30-6:00	Coleman/ Hursting	Why is the PI3K/ Akt/mTOR pathway one of the most commonly altered pathways in tumors	
April 5	2308 3:30-6:00	Coleman/ Carroll	Microbiome	
April 12	241R 2:00-4:30	Makowski/ S Krupenko	P53 signaling	Only R241 is available
April 19	241R 2:00-4:30	Makowski/ Beck	T-cell metabolism	
April 26	241R 2:00-4:30	Makowski/ Beck	Micronutrients and immune function	

A problem set, usually based a recent publication, and a general reference (review article) will be given each week and students will submit written (typed) answers of **no more than 3 pages** at the following week's meeting. During that meeting, students will discuss and defend their answers.

Grading

YOUR FINAL AVERAGE (%)	LETTER GRADE
89-100	H
79-88	P
70-79	L
<70	F

1. Grading: Each problem will have 3-4 sections; each section will be worth 10-50 points; class participation is expected. Each class will be given equal weight toward your final grade. Insight, intelligence, cleverness, will be rewarded. Try to use a variety of methods.

2. Questions will generally have the following framework:

A: A general question to help you review important background information about the topic.

B: Describe and interpret figures and data just as though you were writing a "results" section of a manuscript.

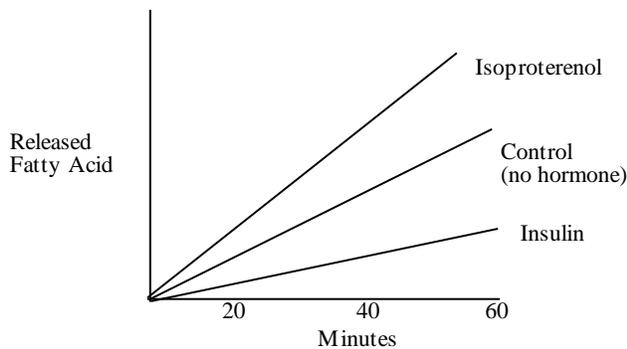
C: Formulate a hypothesis based on your reading and the data you have seen.

- State the hypothesis you will test. Begin by writing, "**My hypothesis is**"

D: Design an experiment based on your hypothesis. Be sure to address your hypothesis. Do not replicate the experiments performed in the paper you have read.

- Be specific about the numbers of animals, ages, diet (if relevant), replicates, etc. you will use. Tell why you want that number, that genotype, etc.

- Do give your analytical method if it is critical. (HPLC, spectrophotometric assay, mRNA measurement, etc.).



- Tell why you chose your statistical analysis (if statistics are warranted).

- Draw graphs or present a table to show what you think the results will be. Hand-drawn, clearly labeled graphs are ok.

- Do not give detailed methods about concentrations of reagents or buffer pH (unless these are critical). It would be sufficient to say: "I will incubate rat fat cells with insulin or isoproterenol and measure fatty acids released into the media at 0, 20, 40, and 60 minutes. Each incubation will be done in triplicate."

- **Explain your expected results.**

- **Controls** are critical! Plan your experiment with both a positive and a negative control, if possible.

- If you use a radioisotope, think about what isotope would be best for your purpose and where the label needs to be. For example, if you label the triacylglycerol in fat cells with [³H]glucose, you won't be able to measure labeled fatty acid release specifically because the label will end up in both glycerol and fatty acid. [³H]Oleic acid would be a better choice.

3. Study Groups and Faculty Help

- If you need help or advice, or want to discuss your experiment in advance with a faculty member, please do so. Go first to the faculty member who wrote the question.

- Students may work together on the Background and Interpretation parts but not on the experimental design.

4. Class participation will be graded

Students will discuss their answers in class. We expect everyone to contribute with *additional* ideas and suggestions during the class.

Accommodations: We want to ensure an optimal environment for students with physical or other disabilities. Students with a disability should contact the UNC Learning Center: <http://www.unc.edu/asp/index.html>. Any learning disability or special accommodations must be **PRE-arranged** with Accessibility Resources and Service (<http://accessibility.unc.edu/>). For additional help, please also see Office of Student Affairs: (http://www.sph.unc.edu/student_affairs/office_of_student_affairs_936_8719.html) or student health http://campushealth.unc.edu/index.php?option=com_content&task=blogcategory&id=33&Itemid=56.

Honor Code at the University of North Carolina. Your participation in this course comes with the expectation that your work will be completed in full observance of the UNC Honor Code. The principles of academic honesty, integrity, and responsible citizenship govern the performance of all academic work and student conduct at the University as they have during the long life of this institution. Your acceptance of enrollment in the University presupposes a commitment to the principles embodied in the Code of Student Conduct and a respect for this most significant Carolina tradition. Your reward is in the practice of these principles. Full details and definitions at <http://honor.unc.edu/>.

Academic dishonesty in any form is unacceptable because any breach in academic integrity, however small, strikes destructively at the University's life and work. You sign a pledge on each exam that indicates "On my honor, I have neither given nor received unauthorized aid on this assignment". If you have any questions about your responsibility or the responsibility of faculty members under the Honor Code, please consult with someone in either the Office of the Student Attorney General (966-4084) or the Office of the Dean of Students (966-4041).