

Nutrition 845: Nutritional Metabolism Spring 2018

Course Instructors: Carroll and Nutritional Biochemistry Faculty
Meeting: 2:00-4:50, Tuesdays, Room 241 Rosenau

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 Tuesdays 2- 4:50 pm	Room/ Time	Faculty	Topic
January 9	241 Rosenau 2:00-4:50	Carroll	Brief introduction
January 16	241 Rosenau 2:00-4:50	Carroll, Coleman	Fatty liver
January 23	241 Rosenau 2:00-4:50	Carroll, Beck	Metals/Nutrition
January 30	241 Rosenau 2:00-4:50	Carroll, Sumner, Pathmasiri	Metabolomics
February 6	241 Rosenau 2:00-4:50	Carroll, Hursting	Does a cancer cell care about the diet of its host?
February 13	241 Rosenau 2:00-4:50	Carroll, Sumner, Stewart	Metabolomics
February 20	241 Rosenau 2:00-4:50	Carroll, Thomas	Intestinal microbiota and nutrition
February 27	241 Rosenau 2:00-4:50	Carroll, Klett	Insulin clamp
March 6	241 Rosenau 2:00-4:50	Carroll, Shaikh	Fatty acids and obesity/diabetes
March 13	---	-----	-----Spring Break-----
March 20	241 Rosenau 2:00-4:50	Carroll, Coleman	Lipids/lipoproteins
March 27	241 Rosenau 2:00-4:50	Carroll, Bartelt	Intestinal microbes and undernutrition
April 3	241 Rosenau 2:00-4:50	Carroll, Hursting	CRISPR
April 10	241 Rosenau 2:00-4:50	Carroll, Stybo	Environmental endocrine disruptors
April 17	241 Rosenau 2:00-4:50	Carroll, Beck	T-cell metabolism

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.

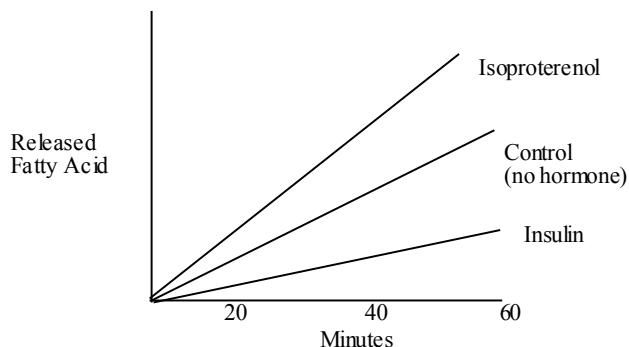
C: Formulate a hypothesis based on your reading and the data you have seen.

- 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).