



BIOCHEM 901 Seminar in Nutrient and Metabolism (Cross-listed as NS 901)

Credits: 1

Canvas Course URL: <https://canvas.wisc.edu/courses/104715>

Course Designations and Attributes: Graduate

Meeting Time and Location: Tuesday, 10:45 am, Biochemistry 175

Instructional Mode: Face-to-Face instruction

Specify how Credit Hours are met by the Course:

Traditional Carnegie Definition – One hour (i.e. 50 minutes) of classroom or direct faculty/instructor instruction and two hours of out of class student work each week over approximately 15 weeks.

INSTRUCTORS AND TEACHING ASSISTANTS

Instructor Title and Name:

Professor James Ntambi, Dept. of Biochemistry
Associate Professor Rozalyn Anderson, Dept. of Medicine
Professor Richard Eisenstein, Dept. of Nutritional Science

Other faculty instructors:

Alan Attie, Jing Fan, Brian Parks, Eric Yen, David Pagliarini, Matt Merrins, Dudley Lamming

Instructor Availability: by appointment

Instructor Email/Preferred Contact:

james.ntambi@wisc.edu

rozalyn.anderson@wisc.edu

eisenste@nutrisci.wisc.edu

OFFICIAL COURSE DESCRIPTION

Course Description:

This is a seminar format class in which current topics in metabolism and biomedical research are discussed and critically evaluated. Papers are selected by students with approval from faculty

instructors. On a rotating basis one student leads the presentation and discussion each week. All students read material assigned each week, and each student other than the presenter must submit written material through the canvas site in advance of the class. The discussion leader will explain the background materials, methodology, experimental results, and broader implications of the publication. All participants will be expected to take an active role in the discussion and the presenter is expected to incorporate and address the questions in their presentation. At least two faculty will preside over each class and will promote discussion. At the end of each session the faculty present will directly provide input to the speaker.

Requisites:

Advanced undergraduate level coursework in nutrition and metabolism and current standing as a graduate student in iPiB, IGPNS, or similar graduate program.

LEARNING OUTCOMES

Course Learning Outcomes:

Students will become familiar with state-of-the-art research in the area of nutrients and genetic regulation of metabolism. Students will gain communication skills by preparing a presentation, and students will gain experience in critically evaluating experimental results.

Texts: The texts of this course will be primary research literature selected by the professors and students. The literature is available from UW campus libraries.

Representative List of Readings: See below. Student choice papers are selected by the enrolled students.

GRADING

All presenters will be graded on A-F system, 20% for attendance and 80% for their presentations. Non-presenters will receive an S based on attendance and class participation.

A = Excellent grasp of the selected papers' topics and methods; strong ability to ask - or answer - thoughtful and probing questions based on the weekly materials. Two or fewer excused absences

B = A good grasp of the papers' topics and methods and discussion of results; moderate ability to make comments or ask questions. Two or fewer excused absences.

C = A fair grasp of the papers' topics and methods and discussion of results; moderate ability to make comments or ask questions. Two or fewer excused absences.

D = A poor grasp of the paper; several unexcused absences

F = No presentation of the selected paper. Unexcused absences

Participating faculty or instructors will provide feedback to the presenters at the end of each presentation.

DISCUSSION SESSIONS

Date	Topic/Paper
09/20	Maternal intestinal HIF-2α is necessary for sensing iron demands of lactation in mice <i>Sadeesh K. Ramakrishnan et al. Proc. Natl. Acad. Sci. U. S. A., E3738–E3747 (2015).</i>
09/25	Direct Hepatocyte Insulin Signaling Is Required for Lipogenesis but Is Dispensable for the Suppression of Glucose Production <i>Paul M. Titchenell et al. Cell Metabolism 23, 1154-1168 (2016)</i>
10/02	Cleavage of the leptin receptor by matrix metalloproteinase-2 promotes leptin resistance and obesity in mice <i>Rafi Mazor et al. Sci. Transl. Med. 10 (2018)</i>
10/09	Leucine Signals to mTORC1 via Its Metabolite Acetyl-Coenzyme A <i>Sung Min Son et al. Cell Metabolism 28, 1-10 (2018)</i>
10/16	Network Integration of Parallel Metabolic and Transcriptional Data Reveals Metabolic Modules that Regulate Macrophage Polarization <i>Abhishek K. Jha et al. Immunity 42, 419-430 (2015)</i>
10/23	Circadian Reprogramming in the Liver Identifies Metabolic Pathways of Aging <i>Shogo Sato et al. Cell 170, 664-667 (2017)</i>
10/30	TALK-1 reduces delta-cell endoplasmic reticulum and cytoplasmic calcium levels limiting somatostatin secretion <i>Nicholas C. Vierra et al. Molecular Metabolism 9, 84-97 (2018)</i>
11/6	The Small Intestine Converts Dietary Fructose into Glucose and Organic Acids <i>Cholsoon Jang et al. Cell Metabolism 27, 351-362 (2018)</i>
11/13	A ketogenic diet extends longevity and health span in adult mice <i>Megan N. Roberts et al. Cell Metabolism 26 (3): 539–546 (2017)</i>
11/20	Acidosis Drives the Reprogramming of Fatty Acid Metabolism in Cancer Cells through Changes in Mitochondrial and Histone Acetylation <i>Corbet et al. Cell Metabolism 24, 311–323 (2016)</i>
11/27	LKB1 promotes metabolic flexibility in response to energy stress <i>Seth J. Parker et al. Metab Eng, 43(Pt B): 208–217 (2017)</i>
12/04	A Metabolic Function for Phospholipid and Histone Methylation <i>Cunqi Ye et al. Molecular Cell 66, 180–193 (2017)</i>
12/11	Sperm tsRNAs contribute to intergenerational inheritance of an acquired metabolic disorder <i>Qi Chen et al. Science 10.1126 (2015)</i>

12/18	b Cells that Resist Immunological Attack Develop during Progression of Autoimmune Diabetes in NOD Mice <i>Jinxiu Rui et al (Cell Metabolism 25, 727-738 (2017))</i>
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RULES, RIGHTS & RESPONSIBILITIES

- See the Guide's to [Rules, Rights and Responsibilities](#)

ACADEMIC INTEGRITY

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to studentconduct.wiscweb.wisc.edu/academic-integrity/.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

McBurney Disability Resource Center syllabus statement: "The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA." <http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php>

DIVERSITY & INCLUSION

Institutional statement on diversity: "Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion

enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.” <https://diversity.wisc.edu/>