

Nutritional Aspects of Carbohydrates (HUN 6305); 3 credits
Mondays and Wednesdays; 3:00-4:30 p.m.
Aquatic Foods Product Lab (AFPL), room 101

FOCUS: Digestion, absorption, and metabolism of common CHO in the food chain; CHO biochemistry; regulation of CHO metabolism; perturbations of CHO metabolism in disease states

Instructor: James F. Collins, Ph.D., Associate Professor; Food Science & Human Nutrition Department

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Office hours: Mondays, 9:00-10:30 a.m.; Wednesdays, 1:00-2:00 p.m.

Typical classes will be 50% lecture and 50% student-led discussions of CHO-related basic science or clinically-related papers from the primary literature. Dr. Collins will make the lecture materials available to the students in advance and will also select the research papers to be covered. Attendance is encouraged and expected. **No makeup exams or quizzes will be given** (unless an emergency situation can be documented by the student; in this case, giving a makeup will be at the discretion of the instructor). No late assignments will be accepted. All missed assignments will be given a score of '0'.

<u>Assessment</u>	<u>Points</u>
Exam 1	100
Exam 2	100
Research Project	100 (Sp. Aims pg. [15]; presentation [35]; write up [50])
Quizzes (17 total; drop 2 lowest scores)	75 (15 x 5 points each)
Leading Research Paper Discussion	25 points
<u>TOTAL POINTS AVAILABLE</u>	<u>400</u>

Grade Determination: Based upon points earned

A (400-368); B+ (367-352); B (351-328); C+ (327-312); C (311-288); D+ (287-272); D (271-248); E (≤247)

Exams: Each exam will cover lecture material from ~50% of the course. Exams will have discussion and short-answer questions. Other exam questions may relate to interpretation of primary data from a selected research paper. Students will have 90 minutes to complete the exams. The instructor may provide potential exam topics to the students in advance.

Research Project: Each student will select a **CHO-related research topic** of interest and prepare a mock grant application. The topic may (or may not) directly relate to the students' thesis/dissertation research topic. It would, however, be advantageous to model the proposal after the student's research project (e.g. using similar experimental techniques and models). The focus of the project should have relevance to human health and disease, although projects which utilize e.g. rodent models of human disease will be considered acceptable. The scope of the project should allow completion in 2 years and it should be conceptually modeled after an R21 grant application to the NIH ([R21 Grant Info](#)). This is an exploratory type of grant that does not require preliminary data; just a good idea. Project topics will be discussed and finalized in class on Feb. 1st. It is advisable that each student meet with Dr. Collins prior to Feb. 1st to identify potentially acceptable topics. The projects will be presented by students on the last 3 days of class. More information on the presentation can be found below.

Format: Arial, 11-point font; margins set at 0.5 inch on all sides; single spaced, printed on one side only. The paper should be no longer than 5 pages and include the following sections: Cover page with student's name, UF ID and title of grant proposal; Specific Aims (first page); Background and Significance, and Approach (pages 2-5). The approach section should include a clear articulation of anticipated results and potential pitfalls and possible alternative approaches; References (no more than 20). Note that the cover page and the references section are NOT included in the 5-page limitation.

Research Paper Presentation: Each student will present their research project to the class on the designated days. The order of presentation will be randomly selected and will be available to the students 2 weeks in advance. Each student will have 10 minutes for their presentation with 2 minutes for questions. It is suggested that the presentations include the following elements: rationale for choosing topic; background and significance leading to the central hypothesis to be tested; the experimental approach, including methods to be utilized and the model systems utilized; anticipated results and possible alternative approaches; and potential impact and future studies.

Quizzes: Over the course of the semester, 17 papers will be reviewed. Prior to the discussion of each article, a 5 question multiple-choice quiz will be given. The questions may pertain to, for example, the hypothesis being tested, the experimental techniques used, an important result or the overall conclusion of the study. Each quiz will count for 5 points, and the 2 lowest quiz scores will be dropped.

Course Schedule (subject to change)

<u>Month</u>	<u>Day</u>	<u>TOPIC</u> (*students who will lead discussions of papers; randomly elected)
JAN	6 (W) [‡]	Course Intro
	11 (M)	CHO: Basic Nutritional Aspects I
	13 (W)	CHO: Basic Nutritional Aspects II *(Zhao)
	18 (M)	NO CLASS (MLK Jr. Day)
	20 (W)	CHO Biochemistry and Metabolism I *(Ford)
	25 (M)	NO CLASS (Dr. Collins to NIH Study Section Meeting)
	27 (W)	CHO Biochemistry and Metabolism II *(Fatani)
FEB	1 (M)	GI Tract Physiology/ Discussion of Research Project Topics
	3 (W)	CHO Digestion and Absorption *(Rivero)
	8 (M)	Regulation of CHO Metabolism *(Zhou)
	10 (W)	Sodium-coupled Glucose Transporters (SGLTs) *(Lungu)
	15 (M)	Facilitated Glucose Transporters (GLUTs) *(Alabasi)
	17 (W)	Transgenic and Knockout Mouse Models *(Almudaihimi)
	22 (M)	Bariatric Surgery and CHO Metabolism *(Kelley) *** <u>Specific AIMS Page Due</u> ***
	24 (W)	Exam 1
	29 (M)	NO CLASS (SPRING BREAK)
MAR	2 (W)	NO CLASS (SPRING BREAK)
	7 (M)	CHOs and the Gut Microbiome I (Dr. Dahl) *(Zhang)
	9 (W)	CHOs and the Gut Microbiome II (Dr. Dahl) *(Alyousif)
	14 (M)	CHOs and Diabetes *(Guo)
	16 (W)	CHOs and Metabolic Syndrome *(Rodrigues)
	21 (M)	CHOs and Cardiovascular Disease *(El Zein)
	23 (W)	CHOs and Cancer *(Xu)
	28 (M)	CHO Metabolism and Exercise *(Burns)
	30 (W)	Low CHO Diets *(Diez) *** <u>Project Write Ups Due</u> ***
APR	4 (M)	NO CLASS (EXPERIMENTAL BIOLOGY MEETING)
	6 (W)	NO CLASS (EXPERIMENTAL BIOLOGY MEETING)
	11 (M)	Student Project Presentations I
	13 (W)	Student Project Presentations II
	18 (M)	Student Project Presentations III
	20 (W)	Exam 2

[‡]M = Monday; W = Wednesday