

HUN 6305 – Nutritional Aspects of Carbohydrates

3 credits – Two 75 minute lectures each week beginning at 4:30 PM on Tuesday and Friday

Characteristics, absorption, and metabolism of common carbohydrates in the food chain; carbohydrate metabolism and its regulation; carbohydrate metabolism in disease

Dr. James F. Collins will lead classes on August 29 – September 30, 2014 (40% of class and grade).

Dr. Peggy R. Borum will lead classes on October 03 – November 21, 2014 (60 % of class and grade).



Course Section led by Dr. Collins

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

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Office Hours (Aug. 25-Sept. 30): Mondays from 10:00-11:30 a.m.; Thursdays from 1:00-2:00 p.m.

Exam 1: 100 possible points; **Student presentation:** 50 possible points

<u>DATE</u>	<u>TOPIC</u>
AUG 26	Course Intro
29	Basic nutritional aspects of carbohydrates
SEPT 2	Carbohydrate biochemistry and metabolism
5*	GI tract physiology/mechanisms of nutrient transport
9	Carbohydrate digestion and absorption in health and disease
12	Metabolic, hormonal and genetic regulation of carbohydrate metabolism
16	Sodium-coupled glucose transporters (SGLTs)
19	Facilitated glucose transporters (GLUTs)
23	Transgenic and knockout mouse models to study carbohydrate metabolism
26**	Gut microflora and carbohydrate intake; links to chronic disease in humans
30	EXAM 1

*Student paper presentations begin

**Student paper presentations end

Student Presentations: The instructor has selected 7 papers from the primary scientific literature related to aspects of carbohydrate metabolism that complement the lecture topics. Each student, either individually or in groups of 2 (depending upon final enrollment numbers), will present a paper during the second half of class on designated days. Students are encouraged to discuss their papers with the instructor during his office hours in the days prior to their presentations. The presentation should be ~20 minutes in length, thus allowing for 10-15 minutes of discussion. The following aspects of the papers should be covered: 1) Central hypothesis and rationale; 2) Methodology; 3) Results; 4) Discussion and conclusions; 5) Strengths and weaknesses (i.e. your critique); 6) Possible future studies. Points earned will be based upon peer evaluation by fellow students (25 possible points) and the instructors' evaluation of your presentation (25 possible points). Each student will receive feedback on their presentations (based upon anonymous student comments and the instructors' evaluation).

Course Section led by Dr. Borum

Office: FSHN Bldg., Room 409; Phone: 392-7553; mobile: 562-2861; Email: prb@ufl.edu

Office Hours: Mondays from 4:00-5:00 p.m.; Wednesdays from 4:30-5:30 p.m.

In the second section of the course, we will apply what was learned in the first section to discuss 12 papers pertaining to nutritional aspects of carbohydrates published in 2014 or made available in 2014 before publication. The papers are from twelve different journals indexed in PubMed and the authors are from nine different countries. The papers include reviews, primary literature, human trials, animal studies, tissue culture, case reports, best practices, different stages of the life cycle, new tools, and diseases from inborn errors of metabolism to diseases from long-term lifestyles. The discussion leader column will be completed after drop/add. Every student will have a role in the discussion of every paper. You grade will be determined by class discussions and submitted PowerPoint files (40 %), Research Project assignment (8%), and Exam 2 (12%).

DATE	Lecture Title	Discussion Leader
Week 6 – September 29 – October 3, 2014		
Friday, Oct 03, 2014	Carbohydrate and Liver Metabolism	
Week 7 – October 6 – 10, 2014		
Tuesday, Oct 07, 2014	Carbohydrate and Skeletal Muscle Metabolism	
Friday, Oct 10, 2014	Carbohydrate and Brain Metabolism	
Week 7 – October 13 – 17, 2014		
Tuesday, Oct 14, 2014	Carbohydrate and Cardiovascular Metabolism	
Friday, Oct 17, 2014	Homecoming Holiday	
Week 9 - October 20 – 24, 2014		
Tuesday, Oct 21, 2014	Carbohydrate Metabolism in the Neonate (Research Project Description Due)	
Friday, Oct 24, 2014	Inborn Errors of Carbohydrate Metabolism	
Week 10 - October 27 – 31, 2014		
Tuesday, Oct 28, 2014	Carbohydrate Metabolism in Starvation of Cancer Cells	
Friday, Oct 31, 2014	Carbohydrate Metabolism in Type 1 and Type 2 Diabetes	
Week 11 - November 3 – 7, 2014		
Tuesday, Nov 04, 2014	Carbohydrate Metabolism in Low Carbohydrate Diets	
Friday, Nov 07, 2014	Trends in Dietary Carbohydrate Intake	
Week 12 - November 10 – 14, 2014		
Tuesday, Nov 11, 2014	Veteran’s Day Holiday	
Friday, Nov 14, 2014	Microbiome Techniques to Study Carbohydrate Metabolism	
Week 13 - November 17 – 21, 2014		
Tuesday, Nov 18, 2014	Metabolome Techniques to Study Carbohydrate Metabolism	
Friday, Nov 21, 2014	Exam 2	
Week 14 - November 24 – 28, 2014 (November 26 – 28 is Thanksgiving Break)		

Research Project: You will provide a written description of your graduate research project and explain why/how nutritional aspects of carbohydrates is or could be an important component of the project. If you do not have a defined graduate research project at this point, you can create a project that would be interesting to you to do. You will submit the description of your research project to Dr. Borum and to your research project partner who will be assigned to you.

Exam 2 consists of 2 parts:

- You will choose at least paper/topic discussed in class and discuss how you will/could apply what you have learned in class to the project. You will submit this written discussion to Dr. Borum
- You will review your research partner's project and propose way(s) that nutritional aspects of carbohydrates could be incorporated in to the project. You will submit this written discussion to Dr. Borum and to your research partner.