

NUTRITIONAL ASPECTS OF LIPIDS

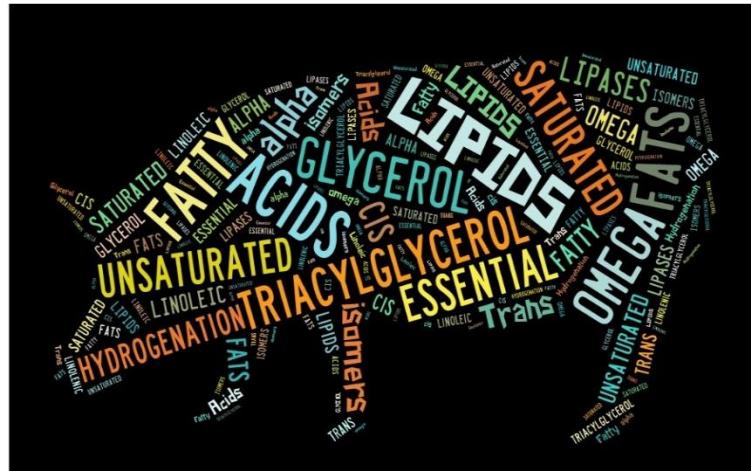
HUN 6301

3 CREDIT HOURS

SPRING 2021

ZOOM (link to room provided via canvas account)

TWO 75 MINUTE PERIODS BEGINNING AT
3:00 PM ON TUESDAY AND FRIDAY



middleearthbiochem.wordpress.com

INSTRUCTOR: Peggy R. Borum, Ph.D.
409 FSHN Building
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OFFICE HOURS: By appointment.

COURSE WEBSITE: <http://lss.at.ufl.edu>

COURSE COMMUNICATIONS: Communication is important to all of us. For email communication, use of the Canvas email is probably the better choice because the instructor's regular email box is often overflowing.

REQUIRED TEXT: We will use the following journal articles published in December 2020 instead of a textbook:

Presenter	Article #	Citation
May	Article 1	A Comparison Of Gene Expression Changes In The Blood Of Individuals Consuming Diets Supplemented With Olives, Nuts Or Long-Chain Omega-3 Fatty Acids Nutrients. 2020 Dec 8;12(12):3765. doi: 10.3390/nu12123765.

Miranda	Article 2	Eucaloric diets enriched in palm olein, cocoa butter, and soybean oil did not differentially affect liver fat concentration in healthy participants: a 16-week randomized controlled trial Am J Clin Nutr. 2020 Dec 31;nqaa347. doi: 10.1093/ajcn/nqaa347. Online ahead of print.
Lucia	Article 3	Coconuts and Health: Different Chain Lengths of Saturated Fats Require Different Consideration J Cardiovasc Dev Dis. 2020 Dec 17;7(4):59. doi: 10.3390/jcdd7040059.
Andrea	Article 4	Effect of Ingestion of Medium-Chain Triglycerides on Substrate Oxidation during Aerobic Exercise Could Depend on Sex Difference in Middle-Aged Sedentary Persons Nutrients. 2020 Dec 24;13(1):E36. doi: 10.3390/nu13010036.
Caitlin	Article 5	Cow's Milk and Dairy Consumption: Is There Now Consensus for Cardiometabolic Health? Front Nutr. 2020 Dec 8;7:574725. doi: 10.3389/fnut.2020.574725. eCollection 2020.
Kellie	Article 6	Microbiota Features Associated With a High-Fat/Low-Fiber Diet in Healthy Adults Front Nutr. 2020 Dec 18;7:583608. doi: 10.3389/fnut.2020.583608. eCollection 2020.
Rufus	Article 7	Dysbiosis of the intestinal microbiome as a component of pathophysiology in the inborn errors of metabolism Mol Genet Metab. 2020 Dec 15;S1096-7192(20)30556-4. doi: 10.1016/j.ymgme.2020.12.289. Online ahead of print.
May	Article 8	Lipid and saturated fatty acids intake and cardiovascular risk factors of obese children and adolescents Eur J Clin Nutr. 2020 Dec 5. doi: 10.1038/s41430-020-00822-0. Online ahead of print.

Miranda	Article 9	Intake of dietary fats and fatty acids and the incidence of type 2 diabetes: A systematic review and dose-response meta-analysis of prospective observational studies PLoS Med. 2020 Dec 2;17(12):e1003347. doi: 10.1371/journal.pmed.1003347. eCollection 2020 Dec.
Lucia	Article 10	Interaction Between GAD65 Antibodies and Dietary Fish Intake or Plasma Phospholipid n-3 Polyunsaturated Fatty Acids on Incident Adult-Onset Diabetes: The EPIC-InterAct Study Diabetes Care. 2020 Dec 10;dc201463. doi: 10.2337/dc20-1463. Online ahead of print.
Andrea	Article 11	Fatty Acids and Cardiovascular Risk. Evidence, Lack of Evidence, and Diligence Nutrients. 2020 Dec 9;12(12):3782. doi: 10.3390/nu12123782.
Caitlin	Article 12	Linoleic Acid Status in Cell Membranes Inversely Relates to the Prevalence of Symptomatic Carotid Artery Disease Stroke. 2020 Dec 4;STROKEAHA120030477. doi: 10.1161/STROKEAHA.120.030477. Online ahead of print.
Kellie	Article 13	Omega-3 long-chain polyunsaturated fatty acid and sleep: a systematic review and meta-analysis of randomized controlled trials and longitudinal studies Nutr Rev. 2020 Dec 31;nuaa103. doi: 10.1093/nutrit/nuaa103. Online ahead of print.
Rufus	Article 14	Levels of omega 3 fatty acids, vitamin D, dioxins and dioxin-like PCBs in oily fish; a new perspective on the reporting of nutrient and contaminant data for risk-benefit assessments of oily seafood Environ Int. 2020 Dec 19;147:106322. doi: 10.1016/j.envint.2020.106322. Online ahead of print.

Feel like you many need a little background review and update on the current knowledge concerning the nutritional aspects of lipids? There are PowerPoint files on the course Canvas account about the following topics using mainly material from the book entitled “**The Molecular Nutrition of Fats**” edited by Vinood B. Patel and published in 2018 by Elsevier:

Classes, Nomenclature, and Functions of Lipids and Lipid-Related Molecules and the Dietary Lipids

Lipid Metabolism: An Overview

Fatty Acids, Gut Bacteria, and Immune Cell Function

Omega-3 Fatty Acids and Epilepsy

Docosahexaenoic Acid (DHA): A Dietary Supplement With Promising Anticancer Potential

Strategies to Counter Saturated Fatty Acid (SFA)-Mediated Lipointoxication

You may be interested in reviewing the following two eBooks in the UF library:

Biochemistry of lipids, lipoproteins and membranes

edited by Neale Ridgway and Roger McLeod.

Published: Amsterdam : Elsevier, 2017.

<http://www.sciencedirect.com/science/book/9780444634382>

The fats of life: essential fatty acids in health and disease

Glen D. Lawrence.

Author: Lawrence, Glen D. 1948-

Published: New Brunswick, N.J. : Rutgers University Press, c2010.

<http://lib.myilibrary.com/Open.aspx?id=256241>

PURPOSE OF COURSE: The purpose of the course is to provide opportunities for students to increase their knowledge of the nutritional aspects of lipids, to critically read the current literature, to communicate the author’s ideas, and to communicate their own ideas using traditional techniques and the latest techniques accepted by peer reviewed journals. A project addressing a real world nutrition problem will replace the traditional exams.

COURSE GOALS AND/OR OBJECTIVES: By the end of this course, students will:

- Practice reading and evaluating, in an organized written format, the current literature concerning the nutritional aspects of lipids.

- Demonstrate their skills at leading and participating in oral discussions concerning nutritional aspects of lipids.
- Apply some nutritional aspect of lipids to a current research problem facing the nutritional community.
- Provide editorial assistance to another student's application of some nutritional aspects of lipids to a current research problem facing the nutritional community.
- Demonstrate ability to communicate via a graphical abstract and a video abstract that are being used by more and more journals.

INSTRUCTIONAL METHODS: This class is designed to increase our knowledge of the nutritional aspects of lipids, to facilitate our critical thinking and application of our knowledge to a real world nutrition issue, and to provide opportunities for us to communicate our ideas.

Class presentation and participation - You will be assigned 2 recent articles which will be read by all the class before your presentations. Each article was published or accepted for publication in December 2020 and addresses a current question about the nutritional aspects of lipids. You will present the information in the article and any relevant information that you choose. You will be graded on your presentation of the information and your ability to lead a discussion among your classmates on the topic.

For the class periods that you are a reader, you will post to the assignment tool in Canvas your review of the article using the following outline:

- I. Questions being addressed by authors**
- II. Why the authors did what they did**
- III. What the authors did**
- IV. What the authors found**
- V. Authors' take home message**
- VI. My comments**
- VII. Contribution to our understanding of the nutritional aspects of lipids**

You will also be graded on your verbal participation in the class discussion.

Class Project – Important questions concerning nutritional aspects of lipid metabolism include the following questions about recommendations for dietary intake:

- How much total fat?
- How much medium chain fat? / Does it make a difference which ones?
- How much long chain fat? / Does it make a difference which ones?
- How much very long chain fat? / Does it make a difference which ones?
- How much saturated fat? / Does it make a difference which ones?
- How much monounsaturated fat? / Does it make a difference which ones?
- How much omega 3 polyunsaturated fat? / Does it make a difference which ones?
- How much omega 6 polyunsaturated fat? / Does it make a difference which ones?

The accompanying follow-up questions are the “how”:

- What specific foods do you recommend emphasizing in the diet?
- What specific food do you recommend de-emphasizing in the diet?

The answers to these two sets of questions are not the same for everyone in the population. Thus, we will divide the population into the following groups with each student taking a group for discussion.

Author	Population Group
May	Preterm Neonates in Neonatal Intensive Care Unit
Miranda	Healthy Full-Term Neonates from birth to 2 years of age and the same population with a diagnosis of overweight/obesity
Lucia	Healthy Children and the same population with a diagnosis of overweight/obesity
Andrea	Healthy Adolescents and the same population with a diagnosis of overweight/obesity
Caitlin	Healthy Young Adults and the same population with a diagnosis of overweight/obesity
Kellie	Healthy Mature Adults and the same population with a diagnosis of overweight/obesity
Rufus	Healthy Elders and the same population with a diagnosis of overweight/obesity

Graphical Abstracts - Even before wide use of written language by the general population, concepts and stories were communicated by drawings and oral communication. Scientific papers published before the widespread use of computers to prepare manuscripts had hand drawn figures and diagrams. Today every graduate student uses computers to generate graphs, tables, and diagrams. For quite a while many of us have looked at the inviting illustrations in textbooks and mechanistic cartoons in papers before reading the text. In recent years several scientific publishing companies have required or suggested a "graphical abstract" (http://www.cell.com/pb/assets/raw/shared/figureguidelines/GA_guide.pdf) and a "video abstract" (<http://www.cell.com/video-abstract-guidelines>) for each manuscript. As readers we can quickly look at the graphical abstract and video abstract to decide if we want to read the paper and the look at it again after reading the paper as a quick review of what we have just read. It is not easy to prepare a graphical abstract and video abstract. One has to have a very clear idea before preparing a very clear picture that communicates the idea to others. The process of preparing the graphical abstract and video abstract can assist in clarifying the idea in the author's mind.

It is a skill that is important to develop for many reasons including that it is likely to be required by more and more journals. For this class we will prepare graphical abstracts and video abstracts for the class project. For the first "exam", you will be assigned as an editor for another student's documents and you will be graded on the quality of the editorial advice you provide. For the second "exam" you will post your graphical abstract and video abstract that has benefitted from your editor's input and your continued development of your thoughts. You will be graded on the scientific quality of the information.

Some publisher websites with their specific information about graphical abstracts are:

<http://www.elsevier.com/authors/journal-authors/graphical-abstract>

http://www.cell.com/pb/assets/raw/shared/figureguidelines/GA_guide.pdf

https://www.thieme.de/statics/dokumente/thieme/final/de/dokumente/zw_synthesis/CFZ-Sample-Graphical-Abstracts.pdf

http://www.scilogs.com/on_the_road/softwares-for-drawing-graphical-abstracts/

<http://cmsw.mit.edu/glance-at-graphical-abstracts/>

<http://www.fems-microbiology.org/journals/graphical-abstract.html>

COURSE POLICIES:

ATTENDANCE POLICY: You have to be present in class in order to participate in class discussion

COURSE TECHNOLOGY: HUN 6301 is a blended course utilizing both Canvas and face to face lectures.

UF POLICIES:

UNIVERSITY POLICY ON ACCOMMODATING STUDENTS WITH DISABILITIES: Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

UNIVERSITY POLICY ON ACADEMIC MISCONDUCT: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <http://www.dso.ufl.edu/students.php>.

****NETIQUETTE: COMMUNICATION COURTESY:** All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. [Describe what is expected and what will occur as a result of improper behavior]
<http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf>

GETTING HELP:

For issues with technical difficulties for E-learning in Sakai, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

** Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Other resources are available at <http://www.distance.ufl.edu/getting-help> for:

- Counseling and Wellness resources
- Disability resources
- Resources for handling student concerns and complaints
- Library Help Desk support

Should you have any complaints with your experience in this course please visit <http://www.distance.ufl.edu/student-complaints> to submit a complaint.

GRADING POLICIES:

Grades will be determined by adding the points obtained for each activity listed in the following table.

Assignment	Points
2 Class Presentations	36
Class participations	15
14 journal article notes	14
Editorial comments on research partners graphical abstracts (Exam 1)	10
Class project graphical and video abstracts (Exam 2)	25
Total	100

GRADING SCALE:

Final Grade	Total Points
A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62

There will be no curve in this course. Final grades will be simply calculated from the total accumulated points.

COURSE SCHEDULE:

Spring 2021 Course Schedule

<u>Week 1</u>	
Tuesday January 12, 2021	Introduction to course and class project
Friday –, January 15, 2021	Part 1 Background review and update on the current knowledge concerning the nutritional aspects of lipids using material from the book entitled “ The Molecular Nutrition of Fats ” edited by Vinood B. Patel and published in 2018 by Elsevier
<u>Week 2</u>	
Tuesday January 19, 2021	Part 2 Background review and update on the current knowledge concerning the nutritional aspects of lipids using material from the book entitled “ The Molecular Nutrition of Fats ” edited by Vinood B. Patel and published in 2018 by Elsevier
Friday –, January 22, 2021	Review of 2020-2025 Dietary Guidelines for Americans Present findings in class
<u>Week 3</u>	
Tuesday January 26, 2021	Nutritional Aspects of Lipid Metabolism pearls in Dietary Guidelines for Americans Post to discussion board and discuss in class
Friday – January 29, 2021	Module 1 - May A Comparison Of Gene Expression Changes In The Blood Of Individuals Consuming Diets Supplemented With Olives, Nuts Or Long-Chain Omega-3 Fatty Acids PowerPoint of discussion leader and outlines of the discussants must be posted by noon
<u>Week 4</u>	
Tuesday February 02, 2021	Review of FoodData Central and Nutritional Aspects of Lipid Metabolism pearls in Food Data Central Post to discussion board and discuss in class
Friday – February 05, 2021	Module 2 - Miranda Eucaloric diets enriched in palm olein, cocoa butter, and soybean oil did not differentially affect liver fat concentration in healthy participants: a 16-week randomized controlled trial

	PowerPoint of discussion leader and outlines of the discussants must be posted by noon
<u>Week 5</u>	
Tuesday February 09, 2021	"Free article" - Zincker, M. K., et al. (2021). "The homeoviscous adaptation to dietary lipids (HADL) model explains controversies over saturated fat, cholesterol, and cardiovascular disease risk." <i>Am J Clin Nutr.</i> Discuss in class
Friday – February 12, 2021	Module 3 - Lucia Coconuts and Health: Different Chain Lengths of Saturated Fats Require Different Consideration PowerPoint of discussion leader and outlines of the discussants must be posted by noon
<u>Week 6</u>	
Tuesday February 16, 2021	How can you use Dietary Guidelines for Americans and FoodData Central while working on your class project?
Friday – February 19, 2021	Module 4 - Andrea Effect of Ingestion of Medium-Chain Triglycerides on Substrate Oxidation during Aerobic Exercise Could Depend on Sex Difference in Middle-Aged Sedentary Persons PowerPoint of discussion leader and outlines of the discussants must be posted by noon
<u>Week 7</u>	
Tuesday February 23, 2021	Module 5 - Caitlin Cow's Milk and Dairy Consumption: Is There Now Consensus for Cardiometabolic Health? PowerPoint of discussion leader and outlines of the discussants must be posted by noon
Friday – February 26, 2021	Module 6 - Kellie Microbiota Features Associated With a High-Fat/Low-Fiber Diet in Healthy Adults PowerPoint of discussion leader and outlines of the discussants must be posted by noon

<u>Week 8</u>	
Tuesday March 02, 2021	Module 7 - Rufus Dysbiosis of the intestinal microbiome as a component of pathophysiology in the inborn errors of metabolism PowerPoint of discussion leader and outlines of the discussants must be posted by noon
Friday – March 05, 2021	Module 8 - May Lipid and saturated fatty acids intake and cardiovascular risk factors of obese children and adolescents PowerPoint of discussion leader and outlines of the discussants must be posted by noon
<u>Week 9</u>	
Tuesday March 09, 2021	Module 9 - Miranda Intake of dietary fats and fatty acids and the incidence of type 2 diabetes: A systematic review and dose-response meta-analysis of prospective observational studies PowerPoint of discussion leader and outlines of the discussants must be posted by noon
Friday – March 12, 2021	Module 10 - Lucia Interaction Between GAD65 Antibodies and Dietary Fish Intake or Plasma Phospholipid n-3 Polyunsaturated Fatty Acids on Incident Adult-Onset Diabetes: The EPIC-InterAct Study PowerPoint of discussion leader and outlines of the discussants must be posted by noon Graphical abstract drafts for editor review must be posted to the discussion board by 5:00 PM

<u>Week 10</u>	
Tuesday March 16, 2021	Module 11 - Andrea Fatty Acids and Cardiovascular Risk. Evidence, Lack of Evidence, and Diligence PowerPoint of discussion leader and outlines of the discussants must be posted by noon
Friday – , March 19, 2021	Module 12 - Caitlin Linoleic Acid Status in Cell Membranes Inversely Relates to the Prevalence of Symptomatic Carotid Artery Disease PowerPoint of discussion leader and outlines of the discussants must be posted by noon Editorial review of graphical abstract drafts must be posted to the discussion board by 5:00 PM

<u>Week 11</u>	
Tuesday March 23, 2021	Practice for Celebration of graphical abstracts and video abstracts –3 authors and their editors
Friday - March 26, 2021	Module 13 - Kellie Omega-3 long-chain polyunsaturated fatty acid and sleep: a systematic review and meta-analysis of randomized controlled trials and longitudinal studies PowerPoint of discussion leader and outlines of the discussants must be posted by noon
<u>Week 12</u>	
Tuesday March 30, 2021	Practice for Celebration of graphical abstracts and video abstracts – 4 authors and their editors
Friday – April 02, 2021	Module 14 - Rufus Levels of omega 3 fatty acids, vitamin D, dioxins and dioxin-like PCBs in oily fish; a new perspective on the reporting of nutrient and contaminant data for risk-benefit assessments of oily seafood PowerPoint of discussion leader and outlines of the discussants must be posted by noon
<u>Week 13</u>	

Tuesday April 06, 2021	Graphical abstracts must be posted to the discussion board and to the assignment tool by noon
Friday – April 09, 2021	Dress Rehearsal for Celebration of graphical abstracts and video abstracts – 3 authors and their editors
<u>Week 14</u>	
Tuesday April 13, 2021	Video abstracts must be posted to the discussion board and to the assignment tool by noon
Friday – April 16, 2021	Dress Rehearsal for Celebration of graphical abstracts and video abstracts – 4 authors and their editors

Week 15	
Tuesday April 20, 2021	Celebration of graphical abstracts and video abstracts

Disclaimer: This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.