Dear Incoming M1 Students,

Welcome to the College of Medicine and the M1 Medical Biochemistry & Nutrition course. To make sure everyone starts the course at roughly the same level of understanding, I am assigning 4 introductory chapters as required pre-readings. To complement these chapters, there is also one short article on Protein-Energy Malnutrition from the primary literature to be read in advance. The information contained in these pre-readings forms the foundation for much of the course and for a Team Based Learning (TBL) exercise that will be held on Monday 8/22/16. The Learning Objectives (LO’s) for each of these pre-readings are attached to this document.

I will be using a different textbook this year as compared to last year, because it has very short (and concise) chapters to encourage reading of these chapters before class. The textbook we will be using this year is: Biochemistry (Lippincott Illustrated Reviews Series) 6th Edition, by Denise R. Ferrier. Considering this book is also a great resource for STEP 1, and has over 500 additional NBME-style practice questions available online, I strongly encourage you to purchase it. The text is available from Amazon and other online retailers for about $50 - $65 (be sure to get a NEW copy with an unused access code).

The pre-readings from MARKS’ and on Protein-Energy Malnutrition by Castiglia, P.T. (1996) Protein-Energy Malnutrition (Kwashiorkor & Marasmus). J.Pediatric Health Care 10, 28-30 will be available online beginning 8/1/16. To access these pre-readings log into Blackboard (https://compass2g.illinois.edu/) with your UIUC netID and password. They will then be in the M1 Medical Biochemistry folder in a sub-folder called Pre-readings. Please let me know if you have any difficulties accessing these readings.

I look forward to meeting you and helping you to understand (and enjoy) Medical Biochemistry & Nutrition. Please feel free to contact me if you have any questions.

Sincerely,

David S. McPheeters, Ph.D.
Research Assistant Professor
Course Director and Lecturer in Medical Biochemistry and Nutrition
University of Illinois College of Medicine
202 Med Sci Bldg MC-714
506 S. Mathews Ave.
Urbana, IL 61801, USA

Email: dmcpheet@illinois.edu
Phone: 217-300-2152
FAX: 217-333-8868
Learning Objectives for the TBL #1 on 8/22/16:

SESSION 1 (IndLearn): Pre-reading: MARKS' Chapter 1: Metabolic Fuels and Dietary Components
1. Know the caloric content of carbohydrates, proteins, fats, and alcohol
2. Describe the bodies fuel stores and be able to rationalize why most fuel is stored as fat
3. Be able to calculate BMI and roughly estimate BMR, knowing why estimation of BMR is not accurate for obese people
4. Know the consequences of caloric deprivation (Marasmus), and protein malnutrition (Kwashiorkor)
5. Know the fat and water soluble vitamins in our diets, and know which vitamin(s) strict vegans are most at risk to be deficient of (Hint: know the fat soluble vitamins, everything else is water soluble).
6. Speculate on why edema is often present in Kwashiorkor (hint, it is due to low serum albumin)
7. Outline the proper re-feeding diet for children with protein-energy malnutrition


SESSION 3 (IndLearn): Pre-reading: MARKS' Chapter 2: The Fed or Absorptive State
1. Outline the digestion and absorption of dietary carbohydrates, proteins, and fats
2. Describe the sources of chylomicrons and VLDL
3. Know the four possible fates of glucose in hepatocytes
4. Know the exclusive fuel of the brain and other neural tissues in the fed state
5. Describe why RBC's are absolutely dependent on glucose for fuel and know what the byproduct of glucose utilization by RBC's is.
6. Describe the three fuels used by exercising muscle
7. Know what insulin stimulates in adipose and muscle cells.
8. Describe what Anthropometric measurements are.

SESSION 4 (IndLearn): Pre-reading: MARKS' Chapter 3: Fasting
1. Explain the progression of body fuel usage in fasting, the basal state, and starvation
2. Describe the role of glucagon in fasting
3. Describe the substrates used for Gluconeogenesis and the byproducts resulting from this process
4. Describe where and why ketone bodies are produced and from what fuels they are derived
5. Explain how Creatine Height Index (CHI) can be used for estimating body muscle mass and the degree of malnutrition
6. Elevated ketone levels are found in both uncontrolled type I diabetes and
starvation, what blood test helps differentiate between these two conditions?

SESSION 5 (IndLearn): Pre-reading: MARKS' Chapter 5: Structures of the Major Compounds of the Body
1 Be able to recognize alcohols, aldehydes, ketones, carboxylic acids, ethers, anhydrides, esters, thioesters, and amides (Figure 5.2)
2 Describe the concept of reduced and oxidized carbon in compounds such as alcohols, aldehydes/ketones, carboxylic acid, and carbon dioxide.
3 For carbohydrates, know the definitions of stereoisomer, epimer, aldose sugar, ketose sugar, sugar alcohol (polyol), reduced sugar (e.g. deoxyribose), anomeric carbon, α and β configurations, mutorotation, and N-/O-glycosidic bond. Why are IV solutions containing D-glucose, referred to as Dextrose?
4 For lipids, know the definition of a fatty acid, ω-carbon, saturated/unsaturated/trans/cis fatty acids, mono-/di-/tri-acylglycerol, phosphoacylglycerol, sphinolipid, steroid
5 define tautomer (keto/enol) and epimer
6 Be able to explain what a free radical is