

Class 1: Intro to Clinical Nutrition

Welcome!

I'm so glad you've joined us.

Overview of Digestion & Metabolism

Digestion: macromolecules are broken down into absorbable units via both mechanical and chemical/enzymatic digestion. **Absorption:** most happens in SI because of specialized membrane – the brush border.

- Carbohydrates start as polysaccharides and must be absorbed as monosaccharides (glucose, fructose, galactose)
- Proteins start as chains of amino acids and must be broken down into single AA, dipeptides or tripeptides; occasionally, larger peptides can be absorbed.
- Fats typically start as triglycerides (three fatty acids and a glycerol backbone) and are broken down into monoglycerides + FA to be absorbed into the cell.

Carbohydrate Metabolism

Protein Metabolism

Lipid Metabolism

Basic Overview of Blood Sugar Balance

Why do we care about maintaining blood glucose?

How does the body store energy?

Which two hormones are the main controllers of blood sugar regulation?

Absorptive Phase

This phase is all about building & storage. Insulin dominates in healthy folks. Insulin is what allows most tissues in the body to absorb & use glucose as a fuel. Most of these tissues use it immediately for ATP production; very few can store the glucose for later use (fat, glycogen).

What does insulin do?

Post-Absorptive Phase

After there is no more glucose coming in through the hepatic portal vein, the liver can start to break down stored glycogen, pumping out glucose for the insulin-insensitive tissues (brain, retina, gonads, RBC); everything else starts to run on fatty acids or triglycerides.

What does glucagon do?

What happens when insulin drops?

What if insulin does NOT drop?

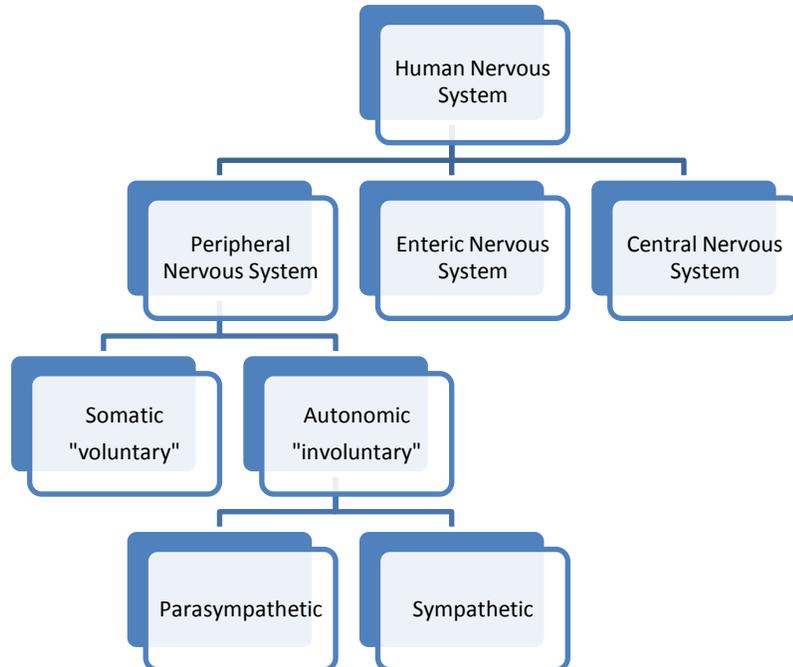
Sleep & Circadian Rhythm

Gut flora

What are the roles of gut flora?

What can we do to alter gut flora?

Stress, SNS/HPA Activation



How might stress affect digestion, metabolism & absorption?

Food Quality

Camille's Six Indicators of Healthy Diet

- Ample & varied produce
- Protein spread throughout the day
- Meals & snacks are at consistent times and eaten in a relaxing environment
- Food is mostly home-cooked
- Diet is low in refined sugars, refined grains and “junk” foods

- Cooking oils are high quality

Helping Your Clients Make Dietary Changes

FAQ

- What about supplements?
- What are the most common clinical deficiencies?
- What about low-carb?
- Saturated fat controversy?
- How horrible is gluten for you?
- Calorie counting?

Selected References

- [Braz J Med Biol Res](#). 2011 Oct;44(10):992-9. Epub 2011 Sep 2. [A link between sleep loss, glucose metabolism and adipokines.](#)
- [Diabetes Metab](#). 2010 Oct;36 Suppl 3:S50-3. [Brain, liver, intestine: a triumvirate to coordinate insulin sensitivity of endogenous glucose production.](#)
- [Nested case-control study of night shift work and breast cancer risk among women in the Danish military](#). *Occup Environ Med* doi:10.1136/oemed-2011-100240
- *Front Physiol*. 2011; 2: 94. [Brain-Gut-Microbe Communication in Health and Disease.](#)

- [Eur J Pharmacol](#). 2008 Apr 7;583(2-3):174-85. [Central effects of stress hormones in health and disease: Understanding the protective and damaging effects of stress and stress mediators.](#)
- [World J Gastrointest Pathophysiol](#). 2012 Feb 15;3(1):27-43. Host-microbial interactions and regulation of intestinal epithelial barrier function: From physiology to pathology
- Till Roenneberg, Karla V. Allebrandt, Martha Merrow, Céline Vetter, [Social Jetlag and Obesity](#). *Current Biology*, Volume 22, Issue 10, 939-943, 10 May 2012. doi: 10.1016/j.cub.2012.03.038
- Food Nutr Res. 2010; 54: 10.3402/fnr.v54i0.5144. Published online 2010 July 2. doi: [10.3402/fnr.v54i0.5144](#) Postprandial energy expenditure in whole-food and processed-food meals: implications for daily energy expenditure

Resources & Good Reads

- [Cooking oil comparison chart](#) (printable chart; very thorough!)
- [Are lower pesticides a good reason to buy organic?](#) (article)
- [Wheat Belly – analysis of selected statements in the book](#) (article)
- [Everything You Always Wanted to Know About Sleep](#) (article; an oldie but a goodie)
- [Motivational Interviewing](#) (book)
- [EWG's Good Food on a Tight Budget](#) (guide)
- [The Hidden Truths About Calories](#) (article)
- [Wild Fermentation](#) and [The Art of Fermentation](#) (books)
- [How to make your own fermented foods](#) (article)

For a web-based version of these resources/references, please visit

www.camillefreeman.com/sylvanintro . If any additional resources come up during conversation I will add them to this page, and you'll also find some bonus materials there including a few of my favorite recipes and some suggestions for intake/initial consult questions.

Thank you for joining me! I hope to see you in one of the upcoming therapeutics webinars happening each of the next four Thursdays – same time, same place!