Pathology 438 Final Examination due: 15 June 2015
Spring 2015
NAME _____

The electronic responses to this examination are due on Monday, 15 June 2015 at end of day (5:00 pm). Submit them to shalloran@lifewest.edu OR to smhbizness@gmail.com. You will be sent an acknowledgement receipt.

You are not allowed to consult with classmates or any individuals *other than* the instructor as you research, prepare and compose your responses to the questions posed in this examination. Lecture content (slides) and your oral presentations are on MOODLE for you to use in preparing answers, in addition to access to the LCCW library, reference books and course text books, and on-line resources. Please proofread and organize your work and assemble the exam before submitting it.

Some answers require you to include a citation of the sources you consult to formulate your response. Format your citation according to MLA or APA standards. (If you wish, you can use the built-in Word feature that formats your references: under the References tab, use Insert Citation and fill in the fields as much as possible. Later you will use Bibliography->Insert Bibliography at the point of the cursor. You might learn how to use Section Break too in order to insert bibliographies under separate answers. I have put in section breaks in this document between questions.)

By working the examination and submitting it for grading you are agreeing to work independently of all other individuals and you are certifying that all the responses and answers to the examination questions are your own work.

Within group A through C, choose ONE of any of the choices answer.
Choose between D or E, and within D, choose ONE of any of the choices

A. Environmental Toxicants. Pick one from the three class of substances below and discuss exposure (places where it might be encountered), its toxicokinetics (ADME) and toxicodynamics (acute, chronic toxicity, effects on physiology and eliciting pathologies. You are allowed to focus on one compound in the class or discuss the toxicology of the class generally

1. Polyaromatic hydrocarbons (PAHs)

Answer: PAHs are largely derived from burning of various products, mostly coal, garbage, gasoline, plastics, etc. Exposure can happen through inhalation of fumes, ingestion (often through food grown in contaminated soil), and cutaneous (through air fumes, but mostly from soil contact, as well). (Agency) Once in your body some is distributed into fat cell, but the vast majority is changed into dihydrodiols and phenols and either conjugated with glucuronide and sulfates to be excreted in bile or with glutathione to become Mercaptic acid and be excreted by the kidneys. (Registry). WE all are likely to incur small levels of exposure to PAH through inhalation via our environment. Small amount do not seems to be dangerous and are excreted from our system within about a day. Chronic increased exposure seems to be related to cancer and acute exposure during pregnancy has been shown to produce birth defects in mice, such as decrease immune function and infant body weight, damage to body fluids and skin. (Agency)

B. Food Toxicants.

1. Sulfur dioxide (SO_2) is added to wine during its production. Discuss what is known about acute and chronic toxicity and other toxicodynamic features. Can wine be produced without using it? Are there are alternatives?

Answer: Sulfur Dioxide is used to preserve wine and improve the robustness of flavor. It is an odorless gas that is pumped and easily dissolved into the wine. You can make wine without adding Sulfur Dioxide, but you can't make wine without it entirely. The bacteria used to ferment wine produces about 10 parts per billion on its own. (Henderson). Wine produces without it will simply just present with a different character. Alternative methods would include accounting for the oxidation and malactic acid fermentation that will occur without addition of Sulfur Dioxide. When the gas is leaked it damages lung and respiratory tissue. It can feel "like you are being suffocated, like with pepper spray" (Groman). Inhalation doses of more than 100 ppm are considered immediately dangerous to life and health. (Registry, ToxFAQs for SulfurDioxide) long term exposure has less research behind it because most long term, sub-toxic inhalation happens with mine workers who are at risk for several others toxic loads and the risk from specifically Sulfur Dioxide cannot be adequately teased out. (Registry, ToxFAQs for SulfurDioxide).

C. Drug-Nutrient Interactions. Select any of the drugs or drug classes below and explain how it affects diet (nutrient absorption). Either suggest an alternative drug and/or explain how an individual can compensate for any effect on nutrition

1. Antacids

Answer: Antacids decrease stomach acid which decreases protein denaturing and subsequently leads to decreased absorption of proteins from food later in the GI tract which ultimately results in malnutrition on various levels. A person can deal with this most effective by dealing with the cause of heart burn directly. Most often a person's food choices are a cause. Either eating things that your body is intolerant to or agitating (such as excess alcohol or caffeine) will lead to heartburn. Until the body heals as is able to produce proper amounts of stomach acid a person can supplement food intake with proteolytic enzymes, like Bromelain, to help with food degradation until the body can do it on its own. Papaya extract can also be help at keeping symptoms at bay. B Vitamins (B12 of particular importance) are important to counter balance vitamin deficiencies. (Balch)

D. Sexual dysfunction therapy. A medication for hypoactive sexual arousal disorder recently was in the news. This medication, flibanserin, is being called a "female Viagra."
(a) Discuss the effect of the drug both at clinical and molecular level
(b) Discuss alternative therapies, including those in chiropractic medicine

Answer: a) Flibanserin is thought to effective at treating female HSDD (Hypo Sexual Desire Disorder). HSDD is a mental condition wherein a female has a sexual desire under a level that is comfortable for her and is subsequently unable to reach satisfaction during engagements due to lack of desire (Pharmacueticals). Flibanserin works on NTs in the brain to do this. In region CA1 of the cortex Flibanserin inhibits firing rate, meaning cortical activation is suppressed. Flibanserin then enhances postsynaptic 5-HT reception in the CA3 region, aka the hippocampus. The hippocampus is the region of the brain which allows for better emotional reactions and connections thought to be a core component in female sexual drive and climax. Flibanserin also raises the levels of both Dopamine and Norepinephrine leading to increased excitability and related to more primal mesencephalic drive.

Essentially this medication is working to increase Mesencephalic drive and induce a perceived sense of emotional connection. This, chiropractically, can be influenced but upper cervical care by ensuring the brain stem is receiving proper input and the sympathetic/parasympathetic balance is maintaining as it should be. We know UC specific care works integrally with the mesencephalon with huge influences on Oxytocin and Orexin and by clearing the atlas make sure that the body is capable of these pathways. Also, stimulating mesencephalic pathways apart from chiropractic can be valuable. Primal activities like intense exercise, eating turkey (a valuable precursor to both serotonin and dopamine pathways), regulating cortisol/melatonin rhythms and obtaining proper sleep. Secondly, a more natural alternative outside of an outside in approach would be that actually to build a connection with your partner. Take walks, talks or whatever the woman needs to feel connected. It would also help to educate the partner that this is an important part of foreplay for her.