What do you guys think the Definition of Pharmacology is?
Pharmacology

- The study of drugs. A drug can be any substance that when administered to living organisms, produces a change in function. Thus, substances such as water, metals, or insecticides can be classified as drugs. However, the term drug commonly means any medication that is used for treating disease.
What do you guys think the Definition of Alcohol is?
Definition of Alcohol

- Alcohol (ethanol, whiskey, ethyl alcohol, or grain alcohol) is probably the most widely used nonprescription sedative-hypnotic and antianxiety agent.
Overview of Alcohol Pharmacology

- History of Alcohol Pharmacology
- Physical Effects of Alcohol
- Alcohol and Tolerance
- Alcohol Metabolism
- Effects on the Body
- Short-term Effects
- Dependency
The Nature and History

- It’s obvious that alcohol has been part of human culture since the beginning of recorded history.
- Such as the technology for alcohol production.
- The process of making alcohol is called Fermentation.
Definitions

- **Fermentation**: Biochemical process through which yeast converts sugar to alcohol.
- **Mead**: Fermented honey often made into alcoholic beverages said to be the first alcoholic drink.
- **Distillation**: Heating fermented mixture of cereal grains or fruit in a still to evaporate and be trapped as purified alcohol.
Physical Effects of Alcohol

- There are 3 different stages:
  - Diffusion
  - Absorption
  - Psychological Functioning
The amount of alcohol in the human body depends on the amount of alcohol in the blood which is known as the BAC. This concentration largely determines behavioral and physical responses. Results in Anger, Fear, Stress and Nausea.
BEER GOGGLES!

- Do you think you can catch a ball drunk?

http://www.youtube.com/watch?v=ORqzaOFUCsg
Alcohol and Tolerance

- Like psychoactive drugs, tolerance to alcohol encourages increased consumption to regain its effects.
- It consists of both an increase in the rate of alcohol metabolism and a reduced response by neurons and transmitter systems like GABA.

Dude, get on my level.
Alcohol Metabolism

- Alcohol is inactivated by the liver metabolism.
- This explains why if you consume one beer in an hour the BAC will remain constant without making the person intoxicated.
- The more you drink the higher the BAC and the larger amount of alcohol cannot be metabolized spilling over into the bloodstream.
Mechanisms of Action

- Central Nervous Effects (CNS)
- Vascular Effects
- Gastrointestinal Effects
- Renal Effects
- Nutritional Effects
- Adverse Effects

- [http://www.youtube.com/watch?v=zXjANz9r5F0&feature=relmfu](http://www.youtube.com/watch?v=zXjANz9r5F0&feature=relmfu) (2:49)
Central Nervous Effects

- Extremely sensitive to the depressant action of alcohol
- Gamma-aminobutyric acid (GABA) is the main inhibitory Neurotransmitter in the brain
Cardiovascular Effects

- Alcohol does not produce any direct deleterious effects on the heart.
- Alcohol may induce dilation of the blood vessels in the skin producing a warm, flushed sensation.
Gastrointestinal Effects

- Alcohol stimulates the secretion of saliva and gastric juices (acid and pepsin)
- Alcohol can cause an increased apatite
- Strong concentration may irritate the gastric mucosa
Renal Effects

- Alcohol promotes and increased excretion of urine
- Alcohol inhibits the renal secretion of uric acid by an unknown mechanism that allows uric acid to build up in the blood
How Alcohol Effects the Liver

- Liver disorders are responsible for 10-15% of deaths in alcoholics
- Three stages of alcohol induced liver disease
  - Stage 1 - Alcoholic Fatty Liver
  - Stage 2 – Fatty Cells Continue to Multiply
  - Stage 3 - Scars Begin to Form on Liver Tissue
Effects on Sexual Organs

- “Provokes desire but takes away from the performance” – Macbeth
- Lower Sperm count
- Diminished hormones in the blood
Effects on the Kidneys

- Alcohol can severely damage the Kidneys resulting in decrease in kidney function and the ability to process blood and properly form urine.
Effects on the Fetus

- Fetal alcohol syndrome (FAS) – condition affecting children born to alcohol consuming mothers that is characterized by facial deformities, growth deficiencies, mental retardation.
Nutritional Effects

- Alcohol is a natural product that possesses calories
- Therefore multiple nutritional deficiencies associated with alcohol consumption produce various conditions such as neuropathies, dermatitis, anemia and psychosis
Adverse Effects

- Separated into acute and chronic effects
- Acute effects: CNS depression, impaired speech, blurred vision and loss of memory
- Chronic effects: similar to sedative hypnotic drugs, malnutrition and vitamin deficiencies
Short-term Effects

- At a low-moderate dose disinhibition (loss of conditioned reflexes due to depression of inhibitory centers of the brain) occurs
- Moderate quantities of alcohol slightly increases the heart rate
- Slightly dilates blood vessels in the arms, legs and skin
- Stimulates appetite
Dependence

- According to the WHO approximately 140 million people around the world are afflicted with alcohol-related disorders
- There are 3 stages
  - Minor
  - Major
  - Delirium Tremens
- Medication for dependency
  - Alcohol dependency afflicts about 4% of the adult population but only 10-15% of these patients receive appropriate treatment
Longwood University College Health Assessments

- LU Students who have used in the past 30 days
- HLTH 313 Students who have drank in the past 30 days

Year
2007-2008
2008-2009
2009-2010
2010-2011
Fall 2012

Percentages
60%
65%
70%
75%
80%
85%
90%
95%
100%
Answers to the Crossword Puzzle

- BEE
-orrh
- FALL
- L
- YEAST
- B
- L
- H
- WARMER
- C
- K
- O
- U
- D
- DENI
- PR
- HANGOVER
- L
- S
- S
- AN
- INHIBITIONS
Citations