

# Drugs and Alcohol

Define the following terms:

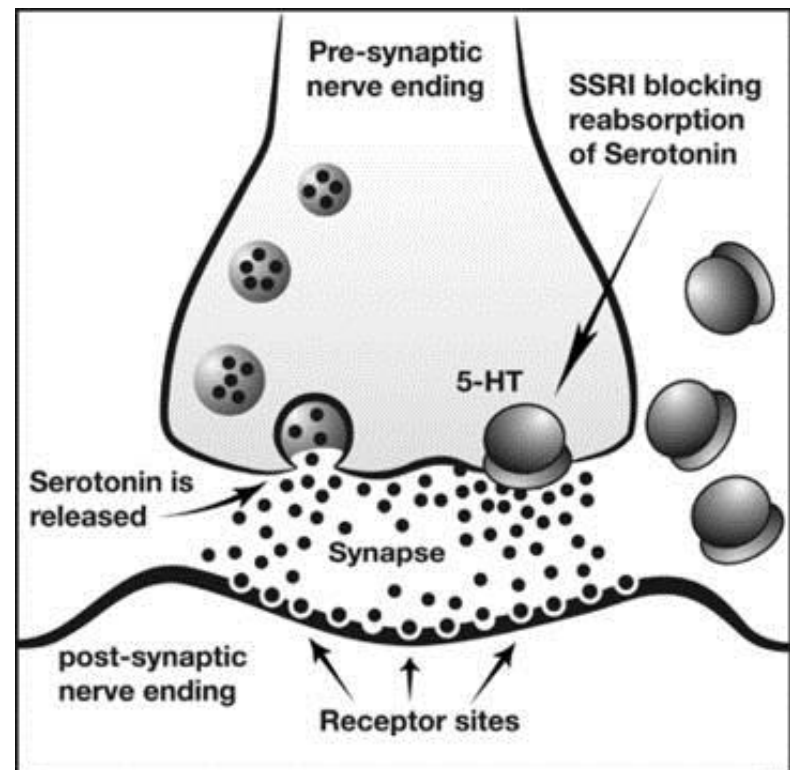
- Drug                      drug abuse
- Tolerance                addiction
- Withdrawal             stimulant
- Depressant             hallucinogen
- anabolic steroid      Alcoholism

1. Name the immediate and long term effects of drug abuse
2. Identify some commonly abused drugs and how each affects the body
3. Describe how alcohol abuse affects the body
4. Differentiate between prescription and over-the-counter drugs.

# Neurotransmitters

- Neurons communicate impulses by releasing chemicals, neurotransmitters, into the synaptic cleft.

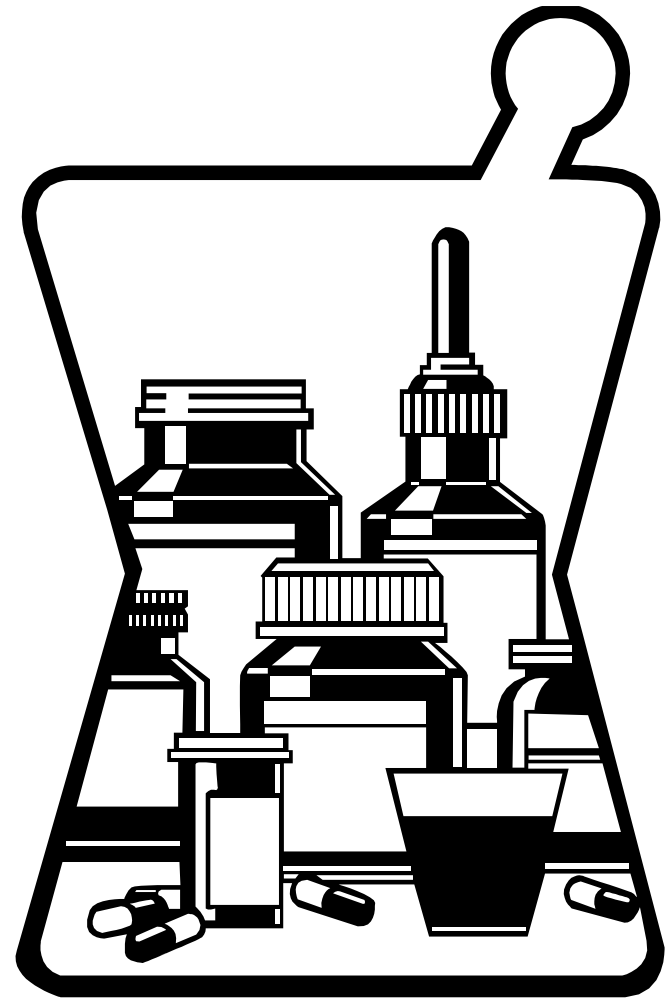
- Drugs interrupt the signals  
replacing neurotransmitters  
Such as cocaine “hi-jacking” the  
sites for Dopamine



Neurotransmitter	Distribution in the Central Nervous System	Functions Affected	Drugs That Affect It
Dopamine	Midbrain, Ventral tegmental area (VTA), Cerebral cortex, Hypothalamus	Pleasure and reward Movement, Attention, Memory	Cocaine, Methamphetamine, Amphetamine. In addition, virtually all drugs of abuse directly or indirectly augment dopamine in the reward pathway
Serotonin	Midbrain, VTA, Cerebral cortex, Hypothalamus	Mood, Sleep, Sexual desire, Appetite	MDMA (ecstasy), LSD, Cocaine
Norepinephrine	Midbrain, VTA, Cerebral cortex, Hypothalamus	Sensory processing, Movement, Sleep, Mood, Memory, Anxiety	Cocaine, Methamphetamine, Amphetamine
Endogenous opioids (endorphin and enkephalin)	Widely distributed in brain but regions vary in type of receptors, Spinal cord	Analgesia, Sedation, Rate of bodily functions, Mood	Heroin, Morphine, Prescription painkillers (Oxycodone)
Acetylcholine	Hippocampus, Cerebral cortex, Thalamus, Basal ganglia, Cerebellum	Memory, Arousal, Attention, Mood	Nicotine
Endogenous cannabinoids (anandamide)	Cerebral cortex, Hippocampus, Thalamus, Basal ganglia	Movement, Cognition and memory	Marijuana
Glutamate	Widely distributed in brain	Neuron activity (increased rate), Learning, Cognition, Memory	Ketamine, Phencyclidine, Alcohol
Gamma-aminobutyric acid (GABA)	Widely distributed in brain	Neuron activity (slowed), Anxiety, Memory, Anesthesia	Sedatives, Tranquilizers, Alcohol

# Drugs

- anything other than food that affects the body, primarily the nervous system



# Medicines

- drugs that treat medical problems
- 2 classes of medicine
  - prescription
  - over-the-counter (OTC)



# Nervous System Drugs

- Stimulants
  - speed up CNS
  - Cocaine, nicotine
- Depressants
  - slow down CNS
  - Alcohol, heroin
- Inhalants + Hallucinogens
  - alter perception
  - LSD, paint thinner
- Anabolic Steroids
  - Increase muscle and strength
  - Heart and liver damage





**DEPRESSANTS** slow messages between the body and brain.

Signals from the eyes and other senses reach the brain slowly.

Heart rate drops, leaving the body with less energizing oxygen.

Breathing rate decreases; risk of lung infections rises.

Messages to muscles are slower; arms and legs can't move well.

**RESULT:** The body can't sense—or respond to—danger quickly.

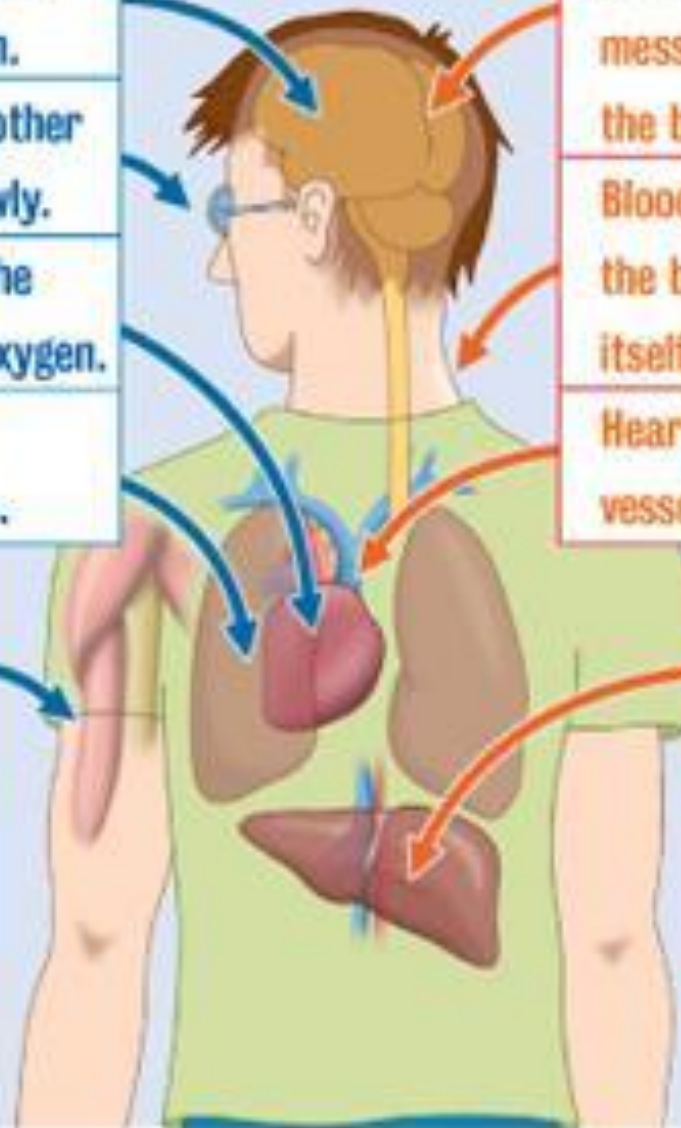
**STIMULANTS** create fake messages in the brain, telling the body that it's under stress.

Blood to skin decreases; the body is less able to cool itself. Overheating is a risk.

Heart rate speeds up. Blood vessels to the heart constrict.

The liver releases sugar into the blood, reducing the body's energy stores.

**RESULT:** If real stress occurs, the body won't be able to respond.



# Drug Misuse vs Drug Abuse

- Misuse
  - improper usage
  - ignoring directions
  - taking more than suggested, etc
- Abuse
  - using illegal drugs or
  - using medicines other than for intended use





# Dangers of Abuse

- Tolerance - need larger amounts to get the same effect
- Dependence (addiction) - cannot control drug use
  - Psychological: emotional need
  - Physical: body needs drug in order to function
- Withdrawal - painful effects when an addicted person stops taking a drug
- Overdose - taking too much of a drug
- [Medical Education Video of the Brain on Drugs](#)