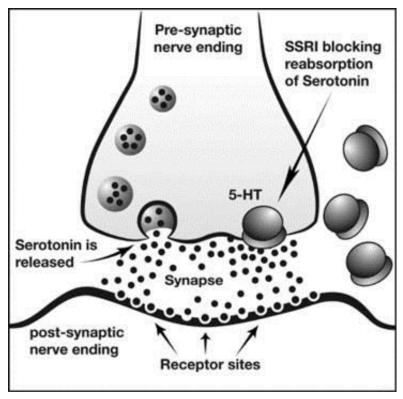
### Drugs and Alcohol

#### 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.

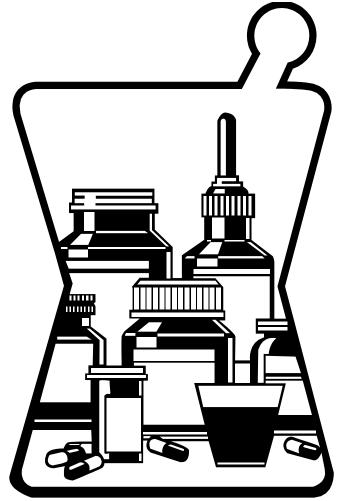
### **Neurotransmitters**

- Neurons <u>communicate impulses</u> by releasing chemicals, neurotransmitters, <u>into the synaptic cleft.</u>
- Drugs interrupt the signals
   replacing neurotransmitters
   Such as cocaine "hi-jacking" the sites for Dopamine



## 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











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

Chapter 19: Hormones & Reproduction



#### Organs of the endocrine system (purple) and other organs containing tissues that secrete hormones (tan)

#### **Hypothalamus**

Secretes hormones involved with fluid balance, smooth muscle contraction, and the control of hormone secretion by the anterior pituitary gland

#### **Pituitary Gland**

Secretes multiple hormones that regulate the endocrine activities of the adrenal cortex, thyroid gland, and reproductive organs, and a hormone that stimulates melanin production

#### **Thyroid Gland**

Secretes hormones that affect metabolic rate and calcium levels in body fluids.

#### Adrenal Glands

Secrete hormones involved with mineral balance, metabolic control, and resistance to stress; the adrenal medullae release E and NE during sympathetic activation

#### Pancreas (Pancreatic Islets)

Secretes hormones regulating the rate of glucose uptake and utilization by body tissues



Secretes melatonin, which affects reproductive function and helps establish circadian (day/night) rhythms

#### **Parathyroid Glands**

Secrete a hormone important to the regulation of calcium ion concentrations in body fluids

#### Organs with Secondary Endocrine Functions

Heart: Secretes hormones involved in the regulation of blood volume

Thymus: Secretes hormones involved in the stimulation and coordination of the immune response

Digestive Tract: Secretes numerous hormones involved in the coordination of system functions, glucose metabolism, and appetite

Kidneys: Secrete hormones that regulate blood cell production and the rates of calcium and phosphate absorption by the intestinal tract

Gonads: Secrete hormones affecting growth, metabolism, and sexual characteristics, as well as hormones coordinating the activities of organs in the reproductive system

Testis

Ovary

# The Endocrine System

Produces
 chemical
 messengers
 called
 HORMONES
 that control
 body activities



# How It Works

- Endocrine glands produce and/or release hormones directly into the bloodstream
- Hormones turn on, turn off, speed up, or slow down body organs/activities.



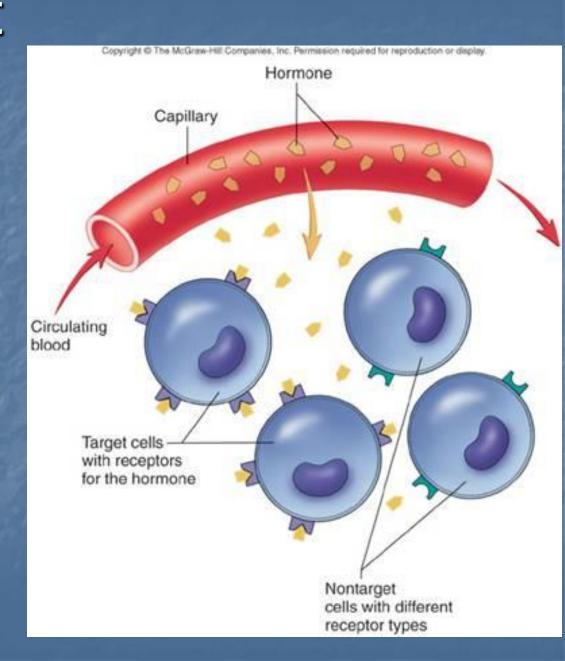
# For Example

- You see a burglar
- Nerve impulse to brain
- Brain sends impulse to adrenal glands to release adrenaline
- Heart and breathing rates increase



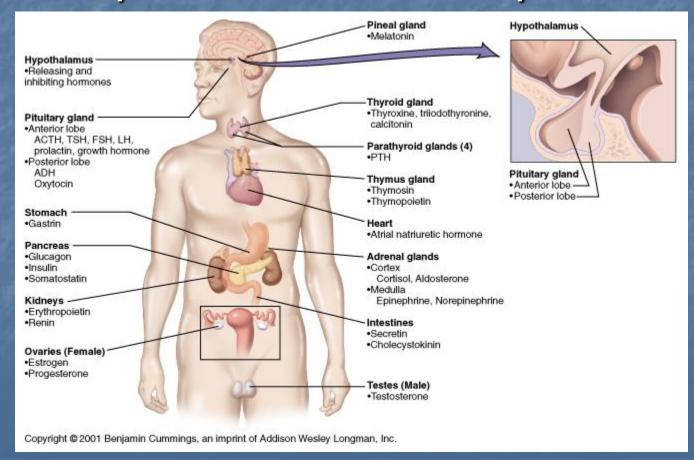
# How Does It Know?

- Hormones only interact with TARGET CELLS
- They attach to Receptors on the cell surface with lock and key binding that is specific to tissue type



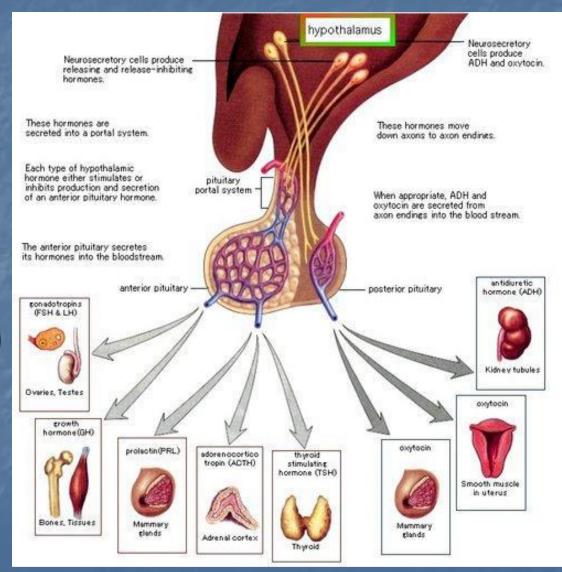
# Hypothalamus

- In the cerebrum
- Links Nervous System to Endocrine System



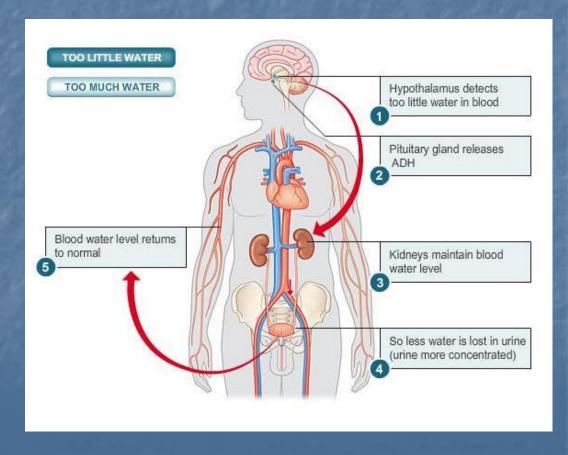
# Pituitary Gland

- "Master Gland" that regulates other glands
- Examples
  - metabolism (thyroid)
  - growth (bones)
  - puberty (gonads)
  - water regulation (kidneys)



# Negative Feedback Loop

 When hormone levels are high, endocrine system signals to stop release of hormone



# Puberty "Wake Up" Hormones

- Follicle Stimulating Hormone (FSH) from pituitary "wakes up" gonads
- Luteinizing Hormone (LH), also from pituitary, signals maturation of sperm & egg
- Both rise and fall together during menstrual cycle

