

The Human Endocrine System

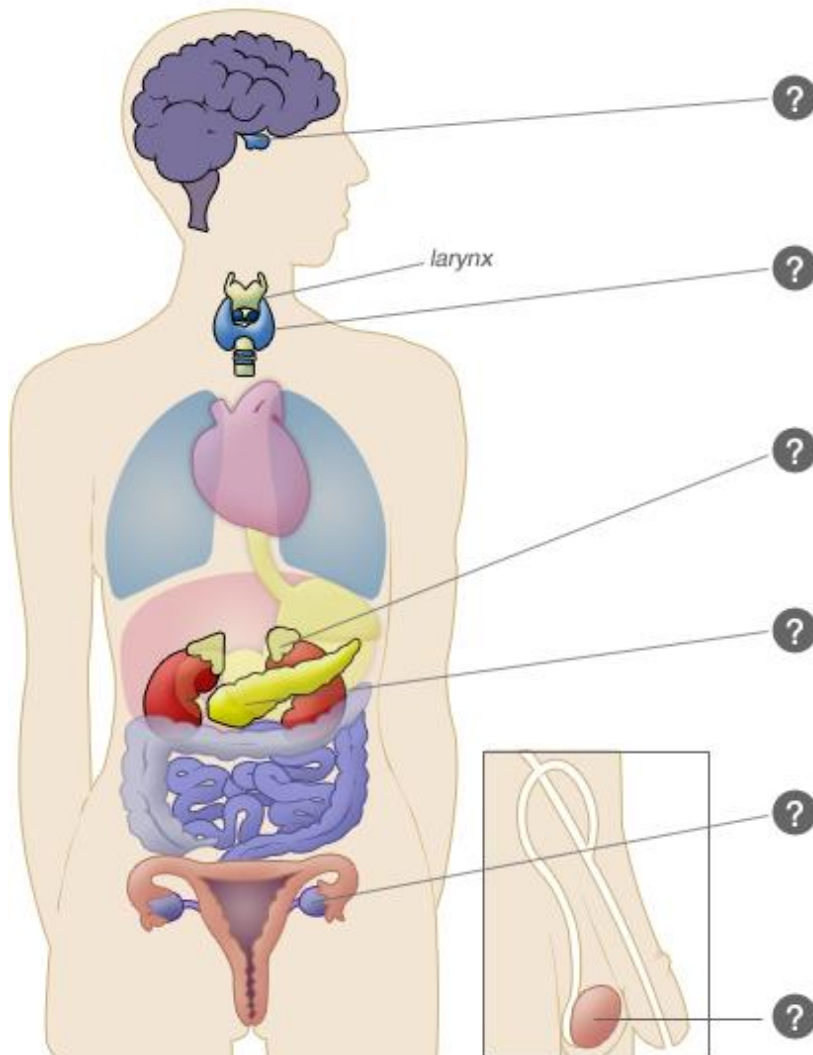
In humans, special chemicals called _____ play a major role in the maintenance of homeostasis because they help _____ and _____ the functions of all organ systems.

_____ – a compound released by one type of cell that has an effect on other cells of the body

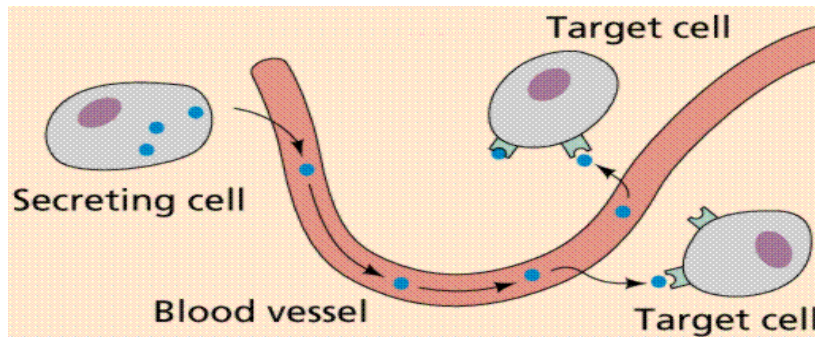
→ Are manufactured by special cells in organs called _____ and are released into the _____

_____ – the organ system that regulates internal environmental conditions by secreting hormones into the bloodstream

Major Glands of the Human Endocrine System



- ➔ Although hormones secreted into the bloodstream reach all cells of the body, they only affect certain _____
- ➔ Cells of the body have different hormone _____ on the surface of their cell membrane that attach only certain hormone molecules



Pituitary Gland (aka “”))

- Size of a _____
 - Located near the base of the _____
 - Secretes _____ types of hormones than any other endocrine gland
 - Divided into two lobes: 1. _____ 2. _____
- ➔ Neurons in the _____ secrete _____ that control the secretion of various hormones in the anterior lobe of the pituitary gland
- ➔ The anterior pituitary then secretes hormones that control the hormone secretions of _____ glands in the body (master gland... yet it is still controlled by the hypothalamus!)

Hormones Produced and Secreted by the Anterior Pituitary...

Hormone	Target	Primary Function
Thyroid-stimulating Hormone (TSH)	Thyroid gland	
Adrenocorticotrophic Hormone (ACTH)	Adrenal Gland	
Growth Hormone (GH)	Most Cells	
Follicle-stimulating Hormone (FSH)		Females: follicle development in ovaries Males: development of sperm cells in testes
Luteinizing Hormone (LH)		Females: stimulates ovulation and formation of the corpus luteum Males: production of testosterone
	Mammary Glands	Stimulates and maintains milk production in lactating females

Hormones Produced in the Hypothalamus and Secreted by the Posterior Pituitary...

Hormone	Target	Primary Function
	Uterus & Mammary Glands	Initiates strong contractions Triggers milk release in lactating females
Antidiuretic Hormone (ADH)		Increases water reabsorption in the kidneys

The Fight or Flight Response (Nervous Hormonal Interaction)

When in danger or feel stressed the sympathetic nerves of the body...

- Increase _____
- Redirect blood flow away from the skin to the _____ (_____ blood vessels in the skin and _____ those in the muscles)
- Dilate the _____ (improves peripheral vision)

→ All are nervous actions that prepare your body to deal with the potential danger

→ Fight or Flight Response =

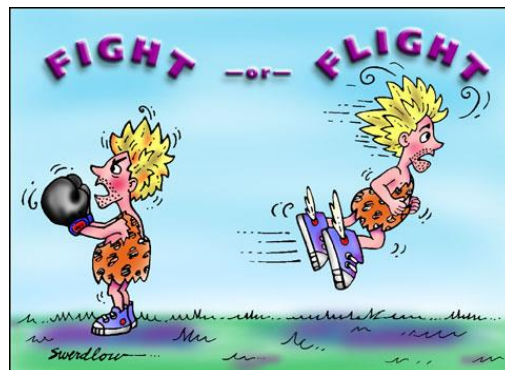
Sympathetic nerves also stimulate the _____ glands to secrete the hormone _____.

Adrenaline...

- ✓ Increases heart rate and blood pressure
- ✓ Causes _____
- ✓ Increases _____ tension

→ These effects would be harmful to the body if continued for an _____ period of time

→ The _____ nerves prevent this from happening by returning the body to normal conditions when the dangerous or stressful situation has ended



Psychoactive Drugs and Homeostasis

_____ – legal and illegal drugs that affect the nervous system and disturb its ability to receive and process information about the internal and external environment

→ Changes in the nervous system may also affect the functions of the endocrine system

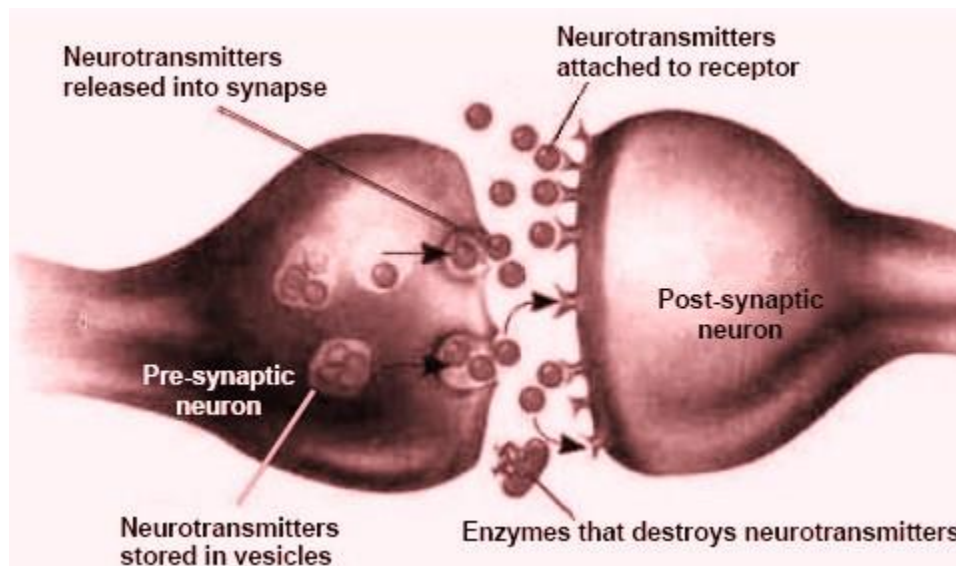
_____ – a drug that speeds up the action of the central nervous system, causing an increase in heart and breathing rates (ex)

_____ – a drug that slows down the action of the central nervous system, causing a decrease in heart and breathing rates (ex)

→ Both stimulants and depressants cause the normal homeostatic level to _____

_____ – a chemical that transmits nerve-cell impulses from one nerve to another; is released from one nerve cell and attaches to receptor sites on another nerve cell

→ Psychoactive drugs interfere with the _____ of neurotransmitter molecules or their _____ to receptors



→ Depressants: delay the affect of neurotransmitters by slowing the reaction of _____ (ex)

→ Stimulants: prevent the neurotransmitters from _____ or recycling; they remain on their receptor sites _____ than normal and result in the nerve firing more frequently (ex)

Alcohol ()

- Most widely used and abused psychoactive drug
- Slows the heart and thus lowers oxygen delivery to the tissues of the body
- Affects nerve cells in the brain that control the hormone that regulates water _____ in the kidneys (kidneys' ability to reabsorb water is impaired and _____ output increases)
- This loss of fluids affects blood pressure
- Alcohol is easily broken down and used for energy... this causes other nutrients (fats etc.) to be broken down and stored in the liver as they are not needed. The accumulation of fats in the liver causes _____ (normal liver cells are replaced by fats)

Nicotine ()

- Most widely used and addictive stimulants
- When inhaled, it reaches the brain in _____ seconds
- Nicotine binds to receptor sites in the brain and gives a feeling of _____ (same as cocaine)
- Increases heart and breathing rates, increases cell metabolism
- Nerve cells in the brain adjust to prolonged exposure of nicotine and produce fewer neurotransmitters. Neurons become less sensitive to drug and more is needed to maintain the same pleasurable feeling = _____

Marijuana ()

- ❖ Mixture of dried leaves, stems etc. of the hemp plant
- ❖ _____ or hash oil are stronger forms
- ❖ Contain _____ and 400 other dangerous chemicals
- ❖ Effects on the user depends on the _____ of the THC
- ❖ Some short term effects: _____ and learning problems, distorted _____, loss of _____, increased heart rate and anxiety

Ecstasy ()

- Aka " _____ or X-TC"
- Synthetic drug with _____ properties
- Stimulating effects similar to that of amphetamines (speed) and cocaine
- Psychological effects: _____, depression, sleep problems, anxiety and _____
- Physical effects: muscle tension, _____, nausea, blurred vision, faintness, sweating and increases heart rate and blood pressure
- Destroys brain neurons that regulate _____, aggression, sexual activity, sleep and _____ sensitivity

Narcotics ()

- Are psychoactive drugs that relieve _____ (painkillers) and make you _____
- Include _____ (from the opium poppy plant)
- Examples: _____ (common prescription liquid or pill painkiller taken by mouth), _____ and _____ (injected into a muscle or in the bloodstream)
- _____ is most widely abused narcotic
- Are highly addictive, short term effects: _____, loss of pain, nausea and _____ problems

Treating Substance Addiction

- _____ and _____ are two common treatments
- Marijuana –
- Alcoholism – prescription medicines Antabuse and Temposil (give _____ side effects when mixed with alcohol – nausea, headaches)
- Nicotine – nicotine patch or gum (_____), steady controlled release of nicotine to reduce cravings
- Narcotics – counselling and morphine-like drug called _____

In general...

- ✓ No single _____ is appropriate for all individuals
- ✓ Addicts may begin using the drug again during or after treatment
- ✓ Recovery from a severe drug addiction is a _____ process requiring many forms of _____